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KENTUCKY

GEOLOGICAL SURVEY

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SERIES VI

THIS BOOK
PUBLISHED ORIGINALLY AND NOW REPRINTED
AS SERIES FIVE---BULLETIN ONE

WILLARD ROUSE JILLSON
Director and State Geologist
FRANKFORT, KY.


UNITED WE STAND DIVIDED WE FALL


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THE SMALLEST AND MOST ACTIVE OIL POOL IN KENTUCKY.

The Ross Creek, Estill County, Kentucky Oil Pool, during its development, was by far the most active in the State. The activity was brought on by the division and sale of a large tract (the J. F. Harris farm) into drilling lots 20x40 feet. There were about twenty oil companies, including the Comet Oil Co., the original lessee, that drilled this farm. In the above view there are fifteen producing wells and four drilling rigs. Photo by W. R. Jillson, 1919.

THE OIL AND GAS RESOURCES OF KENTUCKY

A Geological Review of the Past Development and the Present Status of the Industry in Each of the One Hundred and Twenty Counties of the Commonwealth

BY

WILLARD ROUSE JILLSON
Kentucky State Geologist

SECOND EDITION
3,000 COPIES

Illustrated with One Hundred Photographs Maps and Diagrams

KENTUCKY GEOLOGICAL SURVEY
FRANKFORT, KY.
1920

THE STATE JOURNAL COMPANY
Printer to the Commonwealth
Frankfort, Kentucky.

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He is a man of unlimited energy. In the production of this book he has, in my opinion, not only given freely of his own geologic knowledge concerning the oil and gas resources of this State, but he has collaborated and expanded other information of the most valuable character, rendering it useful at this important period of Kentucky development.

F. PAUL ANDERSON,
Dean, College of Engineering,
University of Kentucky,
Lexington, Ky.

August 14, 1919.


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In response to this tremendous call "The Oil and Gas Resources of Kentucky" was written and published in an original edition of 3000, which was received from the printer on December 15, 1919. Its appearance attested the popularity of the book. Written requests from all parts of the United States, Canada and Mexico, accompanied by postage, have literally flooded this office, many persons having made special trips to Frankfort to secure it. With the exception of a few copies sent to Kentucky and other important libraries, no copies have been issued gratuitously; yet today the first edition of 3000 copies is entirely exhausted, and a special private edition of 500 copies published by the author is all but gone.

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July 1, 1920.
Old Capitol.
Frankfort, Kentucky.

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Succeeding development produced nothing startling in the way of large steady production until 1916, when the extension of the Irvine pool was proven. In 1917, the opening of the Ashley pool, and in 1918, the drilling of the Big Sinking pool, with its tremendous production, placed Kentucky in the list as one more of the important states in the Appalachian oil and gas field. Although surpassed in total value of oil and gas production by West Virginia and Pennsylvania, the new Kentucky fields have nevertheless attracted nation-wide attention; tens of thousands of wells have been drilled in the eastern and southern sections of the State; and the position of Kentucky as an important oil and gas producer has become thoroughly established.

During the period of the development of the oil and gas resources of the State of Kentucky, the various geological surveys of this state, have contributed many important investigations and reports. Of these, two reports are of outstanding importance but have been exhausted in edition. They are by Edward Orton, Sr., "Petroleum, Natural Gas, and Asphalt Rock in Southern Kentucky—1891," and by J. B. Hoeing, "Oil and Gas Sands of Kentucky—1905." Altogether, about one hundred and fifteen articles or separate papers have been written at various times with general or particular reference to the oil and gas in this State. The most of these have been prepared within the last score of years. Taken collectively, they have been of enormous benefit to the oil and gas operators, working in this State.


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The office of geological investigation in any state is to secure the scientific and practical information respecting the state's resources. Such information must be largely general, rather than specific, in order to be applicable. No state report can ever be expected to cover the details of particular properties, and in fact, such is not the intention in preparing any government report. The material in a state report must only be considered as a guide, to any particular locality. Accurate and detailed information on any property must necessarily be compiled by some geologist who has been on the property in question. Such a man will be familiar, through personal experience, with the conditions there present. The value of any report, large or small, will always be determined by the measure in which it serves, as a guide to the development over the broad section, which its subject matter covers.

During the past three years, oil production in Kentucky has increased by leaps and bounds. From the total State production of 752,635 barrels in 1916, Kentucky has risen to what is estimated to be seven million five hundred thousand (7,500,000) barrels of crude oil in 1919.* This rapid expansion has brought into this State thousands of operators and drillers. The material wealth of the State has been increased very greatly. The estimated total value of the oil and gas production for the present year is about twenty-two million of dollars ($22,000,000). New capital in the form of developmental money has also come into the State and it is noteworthy that sections of Kentucky, which are now producing the most oil, have been raised in standard from those of comparative poverty and poor living, to those of comparative luxury. Within the last few months, the discovery of new extensive deposits of oil and gas has been made at points far from the limits of producing territory, and it is entirely possible, if not probable, that before another year rolls around, still other deposits of comparative value will be found in other sections of the State.

*The actual production of crude oil in Kentucky during the year 1919 was 9,226,473 barrels.

In the face of a very widespread demand in this and other states for reliable and scientific information concerning the oil and gas geology, and the oil and gas prospects in all parts of Kentucky, sufficient time was not allowed for the preparation of a carefully compiled and detailed report. The very limited resources in the way of appropriations given this Department, have precluded many important field examinations. Much of the material herewith produced has been taken from the private consulting geological reports of the author. Data have also been freely drawn from many valuable published reports. It may be said that the present report is offered to the public by the Department of Geology and Forestry at a time when it is very greatly needed. Because of the peculiar circumstances attending, it may be further stated, that this bulletin has been prepared without any special appropriation or expense to the State for the principal work has been done by the writer, during his term of office, in addition to his regular work.

In preparing this report, the author has endeavored to harmonize popular and scientific views. The information which is demanded must necessarily be of a scientific nature, yet not too scientific; it must be of an accurate nature in some detail, and yet it must be understandable by those that have not been trained in the science of geology. It has been somewhat difficult to bring together these two viewpoints, and it must remain for the reader to determine in what measure the effort has been a success. Most every one is interested in knowing some thing about the occurrence of oil and gas in nature. It has been the author's special determination to make the text specific enough for all who read this bulletin to grasp the outstanding facts concerning the oil and gas problems in Kentucky.

W. R. Jillson

State Geologist of Kentucky.

August 1, 1919.
Frankfort, Kentucky.

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THE REBORN OIL FIELDS OF KENTUCKY

Much has been said, but considerably less has been written, of an authentic nature, concerning the now rightly famous oil fields of Kentucky. Today, the interest, which not less than ten million investors in the eastern United States take in the success of this rapidly developing oil State, jutifies some careful statement with respect to the really marvelous growth which has taken place.

Toward the end of the year 1914, and during the early part of 1915, the production of Kentucky crude petroleum was fast decreasing. Complete and accurate figures for these two years show a total production for the whole State of Kentucky that rapidly declined below 500,000 barrels per annum. It was sagely predicted at this time by many, as it had often been predicted before,that Kentucky as an oil state would soon take her place in oblivion, and for a time, with large new production from new fields in Kansas, Oklahoma and Wyoming jumping ahead with lightning-like rapidity so as to cause even the most expert calculators to indulge in mental gymnastics, this seemed to be about the truth.

However, a great surprise was in store for the pessimists, and hundreds and hundreds of thousands of small salaried persons owning a speculative disposition, and for whom oil stocks handled on low margins were to provide continuous entertainment, never knew of the interesting things which were immediately in store for them. It all happened in the first part of 1915, when Charles Dulin, an oil operator at Irvine, Estill County, Ky., drilled in a well of promise in a hitherto untested section on Cow Creek. For a time, the results obtained in this well did not become public information, but soon the whole information of the big strike leaked out, and a wild scramble ensued for acreage in the immediate vicinity.

YESSE OLIVER LEASE, ALLEN COUNTY.

This is a small lease of about twenty-one acres, but an excellent producing property. Fifteen wells are pumping on this farm. Many farmers in this section have sold their royalty and surface rights and moved away leaving the operators undisturbed. Photo by W. R. Jillson, July 10, 1919.

This period witnessed then the rebirth of the Kentucky oil fields and ushered in a time of such renewed activity and such large rapid production as this State, or any of the immediately adjoining states, had never before seen. Drillers, contractors, brokers, promoters, salesmen, mechanics, supply men and nondescript individuals followed one another rapidly by tens and by hundreds into Kentucky from the older fields of Pennsylvania, West Virginia, Ohio, Indiana, Illinois, Kansas and Oklahoma. In almost less time than it takes to tell it, housing conditions at Irvine became entirely inadequate. The hospitality of farmers in the immediate vicinity was severely overtaxed, and the hotels of more distant cities like Winchester, Lexington and Mt. Sterling were crowded with men who had made the "Klondike Rush" to Kentucky.

In the face of the most difficult drilling conditions, development went forward, and before the end of 1916, the production of Kentucky stood at one million barrels with every weekly pipe line run showing remarkable and

SHALLOW DRILLING IN ROSS CREEK, ESTILL COUNTY.

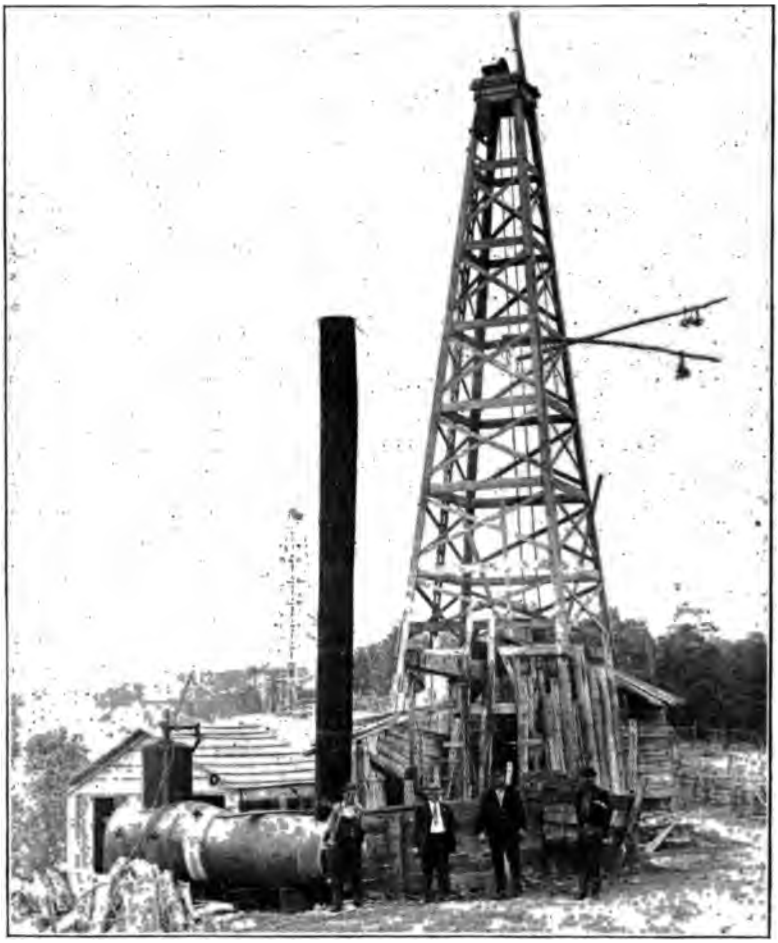
View on the J. F. Harris farm shows the intensity of the drilling effort in this particular pool. Photo by R. L. McClure, March, 1919.

unprecedented advances. By the end of 1917, the production had risen to three million barrels and, at the end of 1918, the increase had not stopped at four million. The year 1919, the greatest year in the oil history of Kentucky, which has witnessed the development and zenith flush production of such pools as the Ashley, the Big Sinking, the Scottsville, and the Gainesville, will show, it is thought, a total production of crude oil in Kentucky of at least 7,500,000 barrels, if the present production continues. Already, with six months of this year past, the figures, still incomplete, show a total of 3,142,488 barrels. This is greater than the total production of the year 1917 and larger, by many thousands of barrels, than all of the production from the State of Kentucky prior to the year 1900.

Kentucky, An Oil State One Hundred Years Old.

In order to get a true idea of the importance of recent development in oil and gas in Kentucky, it is necessary to look back over a whole century to the year 1819, when Martin Beatty of Abingdon, Virginia, drilled in the first oil well in Kentucky on the South Fork of the Cumberland River close to the Tennessee

line in what is now McCreary County, then Wayne County. Beatty had no idea that he was going to get oil. In fact he did not want oil, and knew nothing about oil. He was drilling a shallow well for salt which,



OHIO COUNTY OIL PROPERTIES.

View of the Howard No. 1 well which was drilled to a total depth of 1,740 feet in 1913. Photo by W. R. Jillson.

at that day and time, with railroads unknown, and overland mountain transportation extremely difficult and laborious, was a necessity of much greater importance.

Written records of this early well are few and vague, but it may be supposed that the inhabitants of this section, as well as Beatty, the driller himself, were disgusted when they secured oil, for their chances of recovering salt brine from such a well were spoiled. The farmers in this section, however, soon found that this new rock oil—as the newly coined word, "petroleum" indicates—had some advantages, which they did not at first suspect. It came to be regarded as a universal cure-all for many kinds of ills to which the human flesh falls heir, and was also discovered to be of some service in ridding hogs and other farm animals of vermin.

Cumberland County, forty miles to the west, followed in 1828 with flowing oil production from what are now known to be the upper Ordovician rocks. Here was developed at Burkesville—again as the result of salt water well prospecting—what came to be known throughout the world as the Great American Well. The man who drilled it, whose name has since been lost, said that he would either get salt water or drill into hell. He did not realize that he was going to be forced to literally eat his words. When flowing production was encountered at a shallow depth and the escaping oil and gas caught fire, he, following the superstitious tendencies of his class, thought that he had opened up the infernal regions beneath. Report, again coming from the lips of very old inhabitants of this section, has it that he acknowledged that he had failed in getting salt, but had done what he had promised and opened the door to higher thermal regions. He was so thoroughly convinced of his failure that he did not stop to sell his belongings, but immediately left the country to return in disgust to his native hills in Pennsylvania.

The oil from this phenomenal well flowed unrestrained down the little branch in which it was drilled into the Cumberland River, to a point forty miles below Burkesville, where a grass fire ignited it. There resulted the very unusual phenomenon of a burning river, for the flames crept back little by little to the mouth of the well. People of this day and time who have become so calloused to the new and unusual things that happen, will have difficulty in appreciating the consternation of the simple farmer folk of this region, who were thus introduced

in an accidental way to the highly inflammable characteristics of the new rock oil—petroleum. A barrel of this oil was shipped down the Cumberland and through New Orleans to England with the avowed purpose of having it analyzed by a British chemist. Unfortunately, before it fell into the hands of the proper parties, suspicion fastened itself upon the dark, oily, unfamiliar cargo, and it was dumped overboard into the Atlantic. Nevertheless, the growing popularity of this petroleum, from a medicinal standpoint, caused its fame to spread, and before long it became commercialized. It was put up in small, dark, half-pint bottles, with the name "American Oil" blown in them. They were sold everywhere for 50 cents each. In this day and time, when high grade, Kentucky, crude oil sells for $2.70 per barrel, it may be pointed out that, through an irony of fate, this early pro-

ROSS CREEK DEVELOPMENT.
View of the activity of the Bourbon Oil and Development Company on the J. F. Harris farm. Photo by R. L. McClure, March, 1919.

duction secured a price per barrel which was 125 times greater than the present, in fact, about $340 per barrel.

Great advances, however, were being made in Pennsylvania during this period, and some of the advantages of petroleum as a fuel, especially for kerosene, became known. Following the discovery of oil near Burkesville, salt well drilling again opened up oil bearing strata in the lower coal measures near Barbourville in Knox County. This well, a shallow one, flowed for a short time. With its discovery, the vertical, geological delimitations of the future "producing sands" of the State of Kentucky were established. In fact, subsequent prospecting has shown no commercial production, either higher or lower, in the geological scale, though it is true that much has been found in between the limits that were not known at this early date.

The temporary halt in the development of the oil and gas fields occasioned by the Civil War was suddenly broken by a wave of excitement in prospecting, which spread over the entire State of Kentucky during the latter part of the '60s. Wells were drilled everywhere. Allen, Barren, Clinton and many other counties joined the list of commercial producers. During the latter part of the nineteenth century, a great demand for crude oil for the purpose of kerosene refining, as well as for a growing list of by-products, restimulated field activity and resulted in the bringing in of reports of oil and gas production, and shows in practically every county in the State outside of the central Blue Grass area.

Louis H. Gormley, an experienced oil operator, coming from New Castle, Penn., in 1890, journeyed over 150 miles up the Big Sandy River into Johnson, Floyd, Magoffin, Knott, Letcher and Pike Counties. At that time, there was no railroad in this part of Kentucky, and in fact, one did not come into this section until nearly fifteen years later. Observing the general similarity of the geology and topography of this part of Kentucky with that of the oil bearing portion of his native state, Pennsylvania, he came to the conclusion that circumstances favored the finding of oil in Floyd County. With an adventurous partner, he drilled in, in 1892, at the mouth of Salt Lick Creek on Right Beaver Creek, at a depth of about 1000 feet, the first flowing oil well of eastern Kentucky. This well was destined to become the nucleus of the now famous Beaver Creek oil pool, which

HAULING A RIG IN THE BIG SANDY VALLEY.

Eastern Gulf Oil Company moving its heavy National rig over very poor roads from Bull Creek to Left Middle Creek, Floyd County, Ky. Photo by W. R. Jillson, March, 1918.

has been producing oil daily ever since. The news of the strike spread rapidly and caused a great influx of new capital and enthusiasm. Other wells were drilled in this and adjoining sections, and Floyd, Knox and Wayne Counties came to the front with substantial, though small, new oil production from the "deeper sands" of the Pennslyvanian and Mississippian systems.

The second chapter of the development of Kentucky oil fields came to a close with Meade, Martin and Breckinridge Counties listed as gas producers. The picturesque side of development was inevitable for in none of these counties, at this time, were modern means of transportation available. Supplies had to be secured by long, tortuous, pole boat voyages from Ohio River trading points. As compared to the present, it was indeed a day to try the patience and ingenuity of the most clever and most hardy men. Inconveniences and disadvantages were met everywhere, and the low price of crude production and the difficulty with which it was placed on the market made small wells much less attractive than they are now.

DEVELOPMENT SINCE 1900.

Oil prospecting in Kentucky up until the year 1900 may be said to have been largely preparatory for the greater strikes which were to come. In the century year of 1900, the Ragland oil pool in Bath, Rowan and Menifee Counties, producing a black, thick, low gravity oil, was drilled in. The production of this field, now nearly exhausted, came from the Onondaga limestone, which has come to be known by drillers and oil people generally as the "Corniferous" or "Irvine" sand. It is found at the base of the Kentucky Devonian system. In this field, the oil "pay" was found at various depths of from 200 to 900 feet below the surface.

FIELD ACTIVITY ON ROSS CREEK, ESTILL COUNTY.
View on the Millie Freeman farm operated by the Lincoln Oil Company. Photo by R. L. McClure, March, 1919.

In the following year, 1901, gas from the same horizon was "drilled in" in the Menifee field at a depth of about 600 feet. This field was early commercialized for the central cities of Kentucky, and is now relatively unimportant, because nearly exhausted. The Sunny-

brook pool of Wayne County was drilled in in the same year, oil coming at a depth of 870 feet from the "Stray," "Mt. Pisgah," "Beaver," "Otter," "Cooper" and "Slickford" sands of the Mississippian System. Later on, deeper drilling revealed the lower Sunnybrook sand from the Trenton rocks of the Ordovician System as an oil producer.

During this period, renewed activity and deeper drilling in all of the older fields continued with varying success. In 1903, the Campton oil pool of Wolfe County created the first recent sensation, oil being struck again in the Onondaga limestone at a depth of 1,000 to 1,250 feet. All told, about 300 wells were drilled into this small field, each averaging in production about fifty barrels. It was at this time that a small amount of oil production was first secured by rank wildcatters near Irvine in Estill County. The extreme shallowness of the oil horizon or "pay" here, however, caused this small pool to be soon drilled up and exhausted. In the same year, the Busseyville and Fallsburg pools of Lawrence County were opened, oil being produced from what is known as the Berea "grit," at a depth of from 1,400 to 1,600 feet. The production from this pool was never large, but like that of all the deeper drilling in Eastern Kentucky presented the very distinct advantage of dependability and long life. Within the last three or four years, the production of this section has been increased from about 1,800 barrels per month to the present production of about 72,000 barrels per year.

The Cannel City pool, in Morgan County, was ushered in by a 700-barrel gusher, which was drilled in in 1912. Great activity followed the opening of this pool, and in 1913, a maximum production of twelve thousand barrels of crude oil per month was established. The pool, however, was relatively short lived, and is to-day of largely historical importance, though still producing.

THE PRESENT PERIOD.

Increasing from a total annual production of 62,259 barrels in 1900 to 1,217,337 in 1905, but 1,213,548 in 1906, Kentucky crude oil production dropped off greatly, till in 1915, the best figures obtainable show only 407,081

barrels. It was at this time that the pessimist's cry grew loudest. Kentucky was disclaimed as the southwestern part of the Appalachian oil field, and men who considered themselves real oil producers stayed away from the State. Over production in the oil market, due to the opening of the Cushing and other new pools of Oklahoma and Kansas, was, however, the real cause of the inactivity at this time.

With renewed wartime demands for crude oil, however, and an increase in prices of all grades generally, a restimulation of exploration was effected, with the result that in 1916, the Irvine pool in Estill County, Ky., was extended to the east and to the south. In Powell County, the Ashley pool was opened in 1917. In Lee County, the greatest producer in the Kentucky oil world of recent times, the Big Sinking pool was drilled in in 1918, and in Allen County, southern-central Kentucky, wild cat drilling opened up the Gainesville and Scottsville pools in 1918 and 1919. In the early summer of 1919,

COVERED STORAGE, ANGIE McREYNOLDS' LEASE.

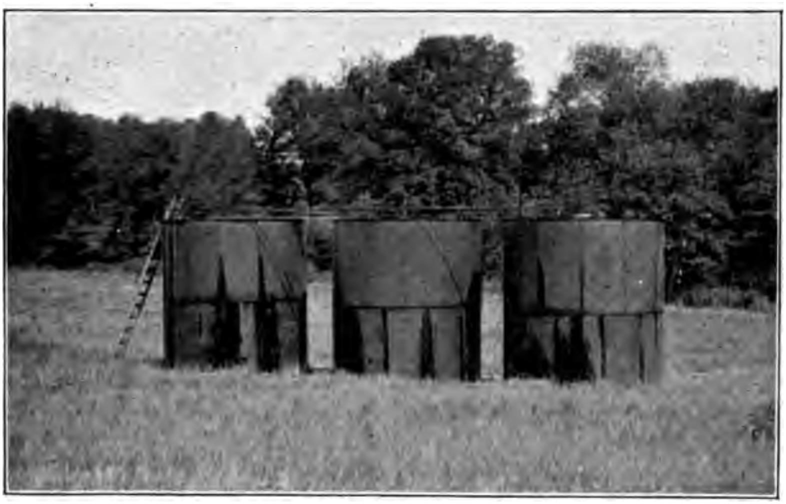
One of the great problems confronting the producer on exceptionally high productive lease like the McReynolds is the disposal of the "flush production." On this lease when a gusher flowing a reported 1.000 barrels came in. all other wells on the lease had to be shut down temporarily. Photo by W. R. Jillson, July 20, 1919.

WHERE TOMBSTONES AND OIL WELLS COMPETE.
View across the little country cemetery south of Scottsville, Allen County, Ky., to the Angie McReynolds' lease which adjoins. Photo by W. R. Jillson, July 20, 1919.

the Angie McReynolds pool of Allen County, and the Jake Moulder pool of Warren County, were drilled in. These last named seven pools centralize the greatest activity in Kentucky today, and in total, are producing about 125,000 barrels per week as reported from pipe line runs of July, 1919.

In all of these pools, the production comes from the Onondaga limestone, commonly known to the drillers as the "Corniferous" or "Irvine" sand, with this exception that in Allen County, at least some of the lower production certainly comes from the Niagaran limestones and shales just below the Onondaga. In the Ashley and Big Sinking pools of Lee and Powell Counties of eastern Kentucky, the Onondaga or "pay" of oil sands ranges from 800 to 1,300 feet below the surface. In Allen County the production comes from a depth of about 250 to 400 feet below the surface. There are, at the present, about 1,000 wells being drilled in Kentucky, and of these about 250 are in Allen County alone. Lee County, containing the Big Sinking pool, which is in point of years older in its development, has about 450 rigs at work, and the remaining 300 are scattered throughout the State.

The production from the Big Sinking and its associated pools, coupled with that of the Gainesville and other Allen County pools, will, for the years 1918 and 1919, exceed by many thousands of barrels the total production for the entire State of Kentucky up to the present time. What promises to be one of the most spectacular new pools in Kentucky is the recently discovered Moulder pool in southeastern Warren County on the



THREE OILY SISTERS.

A battery of three 500-barrel tanks standing full on the Jake Moulder lease, Warren County. This storage awaits completion of the new four-inch pipe line to Smith's Grove. Photo by W. R. Jillson, July 20, 1919.

Barren River. The oil here is found with large quantities of salt water, and a strong gas head, and the largest and most recent well, No. 8, drilled in on this lease had a flush production, it is estimated, of 2,000 to 3,000 barrels. This well was a real gusher, the largest Kentucky has ever witnessed, and flowed, despite vigorous efforts to close it in, for eighteen hours. A six-inch stream spurted fountain-like over 100 feet above the surface, and oil covered the surrounding territory and flowed down an adjoining creek like water. Just what this well will actually do cannot be said at present, for pipe line connections have not as yet been made and temporary tank storage has been exhausted.

With the drilling in of spectacular wells, running everywhere from 100 to 1,000 barrels in the Ashley, Big

SIGN OF THE TIMES IN WARREN COUNTY.
A battery of eight 250-bbl. wooden tanks recently completed and almost immediately filled on the Jake Moulder lease. Photo by W. R. Jillson, July 20, 1919.

Sinking, Scottsville, Gainesville and Moulder pools, oil excitement has reached its maximum. Today, there are not less than 100,000 men interested directly in the oil producing business in Kentucky. Leases, which three or four years ago could be secured for $1.00 a farm, or at a nominal rental of 10c or 25c an acre, now sell from the farmer in the oil producing sections for $10 to $50 per acre. New leases undrilled, written by the owner of the land, today are very rarely secured for practically all of the available territory, for 50 to 100 miles of any producing field, has already been leased, and much of it prospected. Leases adjoining production sell for from $100 to $500 per acre, and adjoining especially attractive producing leases, acreage may not be secured for less than $1,000 to $3,000 per acre. This is what the professional oil man calls "proven stuff," and is bought with the idea that it may be depended upon to produce oil. Many leases, which are partly drilled up and producing, are sold on what is called a production

basis. The lease is purchased, together with its production, on a basis of the amount of oil which it will produce on a ten day test, and the prices which prevail

BUCK CREEK OIL POOL, LINCOLN COUNTY, KENTUCKY.

Views of producing wells, pumping stations and storage tanks of the Belvedere Oil Company and the Daniel Boone Oil Company. Photo by W. R. Jillson, March 20, 1919.

vary from $1,000 to $1,500 per barrel per day. It can be seen by simple arithmetic that a 100 barrel well sold in such a way is very valuable, and even a child can appreciate that as the number of wells or their size in barrels is increased, the interest and the excitement increase.

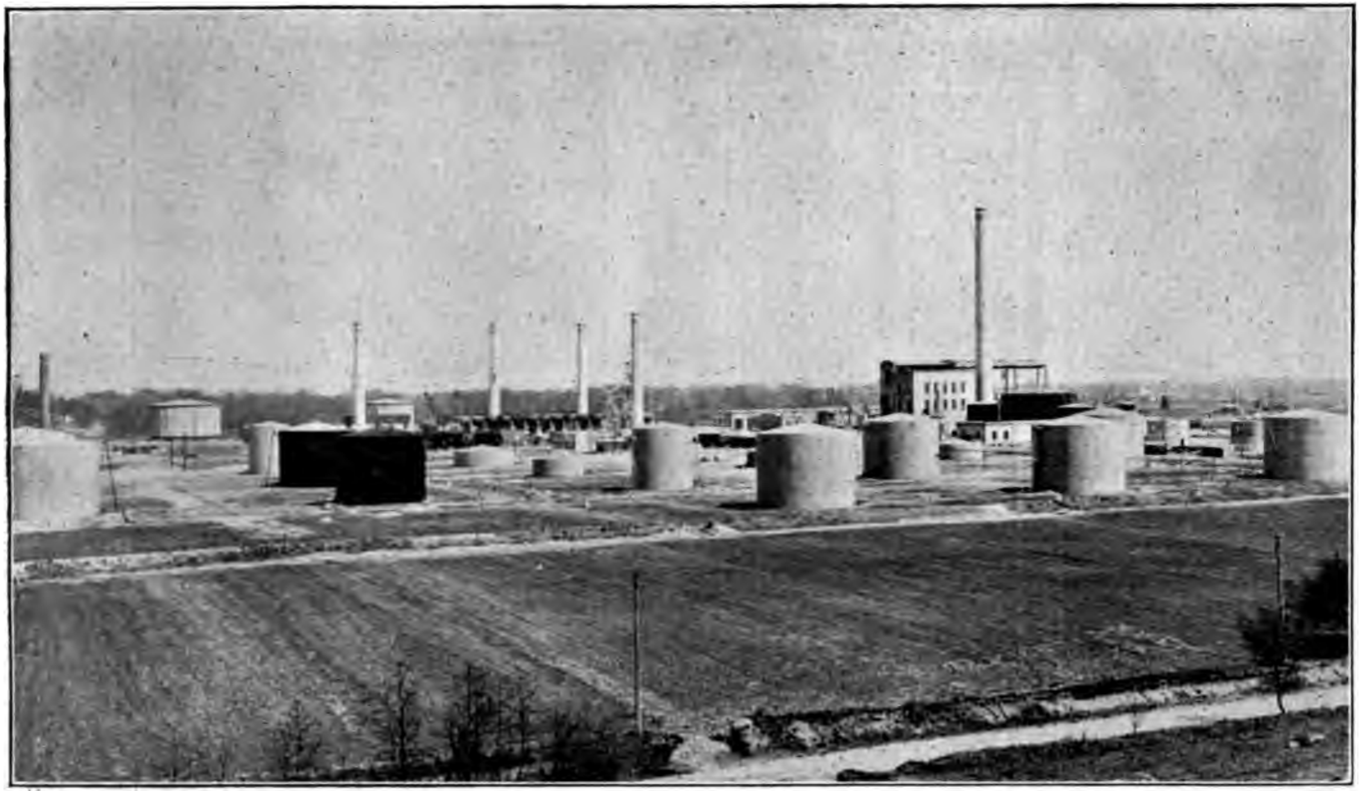
In the train of the oil development in Kentucky has come a vast amount of oil promotion with the result that there are today in Kentucky 612 oil corporations with an estimated total capitalization of $80,143,000.00. This fabulous amount of money, conceivable only to the idle rich and to those to whom the juggling of unearned increments has become a pastime, is representative of the importance of the oil industry in this State. It is also indicative of the growth of the industry during the past four years, for prior to 1916, the total amount of wealth invested in exploring for oil in Kentucky was hardly a fraction of what it is at present. Over capitalization,

watering of stocks, fabulous prices for only mediocre properties have been some of the attending ills which have accompanied the development of the oil industry in Kentucky.

The rapid decline of some wells of shallow depths, which were prolific flush producers, has contributed some uneasiness to the promoters of get-rich-quick schemes. The zenith of high production in the proved fields of the Big Sinking and Gainesville pools has been

ALLEN COUNTY CRUDE OIL GOING IN TO STORAGE.
View at the ends of five gathering lines of the Angie McReynolds' lease. Approximately 60 barrels per hour were being emptied into the receiving tank at the time this photo was snapped. Photo by W. R. Jillson, July 20, 1919.

reached. New pools like the McReynolds and the Moulder still remain uncertainties as to the future. The wild rush for Kentucky oil stock reached its apex in February of this year, and since then oil stocks have been less subject to demand than they were in the six months preceding. At the present, the color generally of the oil stock trading business is decidedly off, and the wise ones are withdrawing their investments from companies which have an unstable character. Federal investigations of the manipulations of trust moneys and stocks of oil companies have had a rather depressing effect on the purchasing public and the straw before the wind indicates the coming of a more reasonable and standardized order of affairs.



LARGEST AND MOST MODERN KENTUCKY REFINERY.
The above view shows a part of the new Standard Oil Company of Kentucky Refinery at Louisville. This plant is one of the big consumers of Eastern Kentucky Crude.

CHAPTER II.

DATA OF KENTUCKY OIL AND GAS PRODUCTION

While the financial side of the oil industry has been passing through an important period of rectification, development in the fields has been going rapidly forward. New wells are being brought in at the rate of from 75 to 100 per week, and new pipe lines and refineries are being constructed. In Louisville, the Standard Oil Company of Kentucky has about completed a new 2,000 barrel refinery on its riverside purchase, and this refinery is one of the most up-to-date and complete in the United States. There are besides, in this State, the Etna and the Stoll Refining Companies, which together will handle about 1,000 barrels per day. In the eastern Kentucky fields, there are two or three small refineries, and at Bowling Green in Warren County, a refinery with 500 barrel capacity is now under contemplation. In eastern Kentucky, the Cumberland Pipe Line Company handles

SOUTH FORK STATION.
An important pumping plant of the Cumberland Pipe Line Company, in Powell County, Kentucky.

all of the crude petroleum from Wayne County, Beaver Creek in Floyd County, Irvine, Station Camp, Ross Creek and Miller's Creek in Estill County, Ashley in Powell County, Big Sinking in Lee County, Campton in Wolfe County, Cannel City in Morgan County and Busseyville in Lawrence County. This line passes to the northeast through West Virginia, and connects with the Eureka Pipe Line, which has a terminus at Philadelphia, Penn. In Allen County, the Indian Refining Company has a pipe line in the Gainesville and Scottsville and Southern pools, and takes its oil by tank cars to its Lawrenceville, Ill., refinery. A small part of Allen County production is also handled in tank cars by very small consumers. The American Pipe Line, recently purchased from receivers' sale, takes some of the Gainesville oil to Bowling Green. A new pipe line is contemplated from Bowling Green to northwestern Allen County pools. The Smith's Grove Pipe Line, tapping the Warren, Allen and Barren County pools along the Barren River, with terminus at Smith's Grove, is now completed. A summary of production, as based on pipe line runs from the eastern Kentucky and Allen County fields, is as follows:

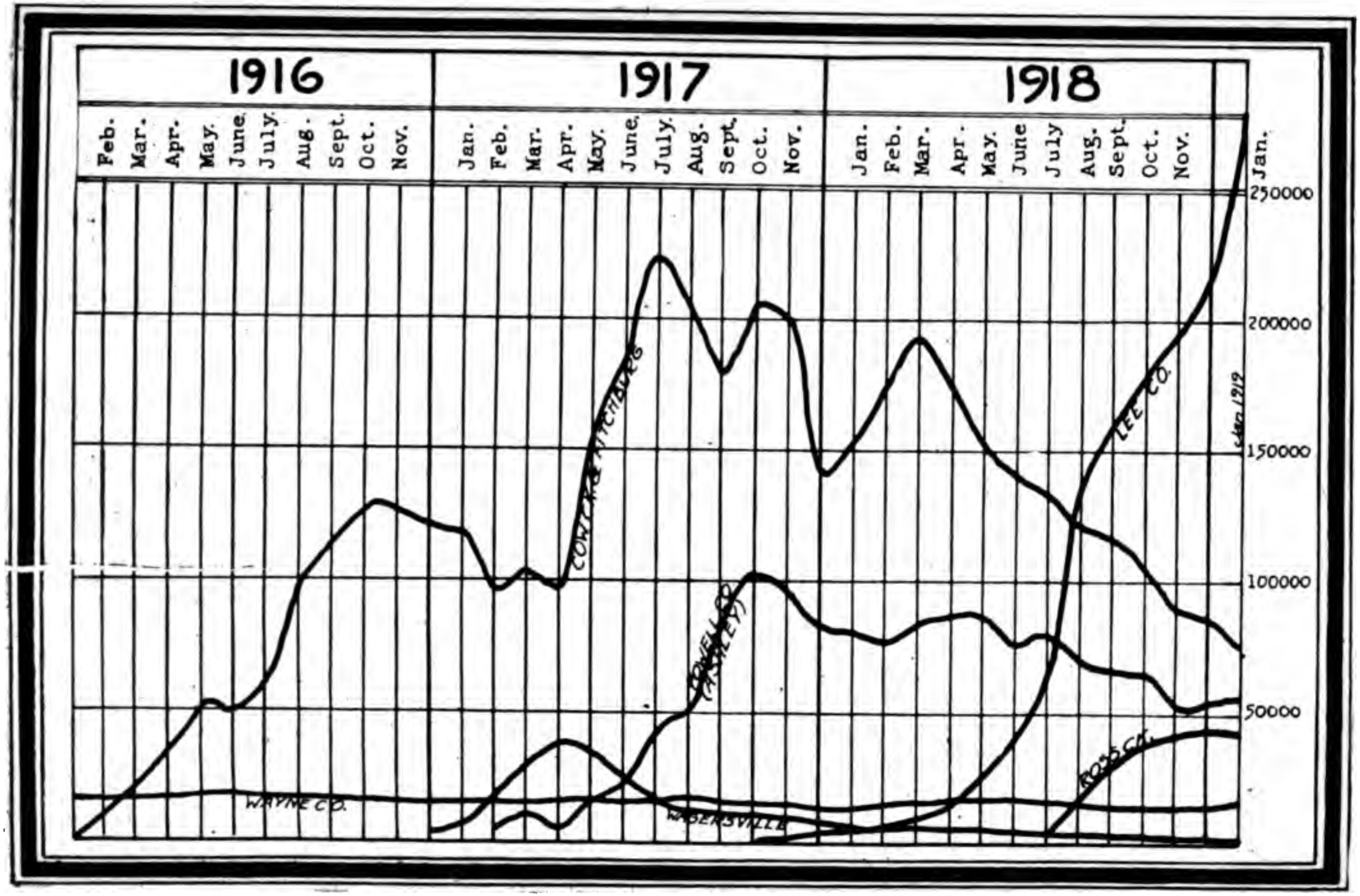
PRODUCTION OF PETROLEUM IN BARRELS IN KENTUCKY FROM 1883 TO 1919.

1883	4,755
1884	4,148
1885	5,164
1886	4,726
1887	4,791
1888	5,096
1889	5,096
1890	6,000
1891	9,000
1892	6,500
1893	3,000
1894	1,500
1895	1,500
1896	1,680
1897	322
1898	5,568
1899	18,280
1900	62,259
1901	137,259
1902	185,331

1903	554,286
1904	998,284
1905	1,217,337
1906	1,213,548
1907	820,844
1908	727,767
1909	639,016
1910	468,774
1911	472,458
1912	484,368
1913	524,568
1914	502,441
1915	437,274
1916	1,144,750
1917	3,088,160
1918	4,035,950
1919	9,226,473

PRODUCTION OF EASTERN KENTUCKY PETROLEUM FIELDS.
CUMBERLAND PIPE LINE COMPANY RUNS FROM WELLS.

Year	For Year Total Runs Barrels	Average Daily Barrels
1913	522,550	1,431.6
1914	479,609	1,313.9
1915	407,081	1,115.3
1916	1,144,750	3,136.3
1917	3,015,640	8,262.0
1918	4,035,950	11,057.7
1919 (First six months, Jan.-June)	2,922,670	15,884.0



CUMBERLAND PIPE LINE PRODUCTION CURVES BY MONTHS FOR EASTERN AND SOUTHEASTERN KENTUCKY.

CRUDE PETROLEUM PRODUCTION IN EASTERN KENTUCKY FOR THE YEARS 1916-1917-1918.
MONTHLY RUNS BY DISTRICTS—CUMBERLAND PIPE LINE COMPANY

YEAR	MONTH	Wayne Co.	Lawrence County	Morgan	Cow Creek and Fitchburg	Campton Stillwater	Beaver Creek	Ragland	Wagersville	Ashley	Torren and Lee Co.	Ross Creek	Olympia
1916	January	17,899	1,829	1,683	2,410	2,384	948	3,646					
	February	17,040	2,510	2,794	9,627	2,906	904	2,564					
	March	17,758	3,533	1,908	19,405	2,925	838	3,075					
	April	16,574	2,577	2,083	34,650	2,911	1,079	3,231					
	May	18,220	3,347	1,662	53,769	2,220	964	3,166					
	June	16,299	3,239	1,927	48,138	3,281	853	2,732					
	July	16,156	3,383	1,732	58,769	2,190	644	3,099					
	August	16,885	3,676	2,839	96,592	2,846	782	3,180					
	September	14,535	3,190	1,677	111,795	2,692	1,908	2,071					
	October	15,774	4,434	1,840	126,310	2,489	1,330	2,970					
	November	14,433	2,886	1,605	127,732	2,805	649	2,540					
	December	13,046	4,277	1,596	120,334	2,370	664	2,685	2,244				
1917	January	14,857	3,687	1,748	118,484	3,165	849	2,320	5,220				
	February	12,179	3,926	1,365	94,354	2,117	478	3,348	15,453	3,918			
	March	15,153	4,714	1,490	104,886	2,411	761	1,914	30,376	9,620			
	April	14,850	4,462	216	94,581	3,846	599	2,990	36,367	4,904			
	May	14,205	4,385	2,746	151,290	3,768	688	2,229	33,574	13,683			
	June	13,867	4,646	1,458	180,686	3,820	897	3,037	24,936	20,762			
	July	14,979	5,389	1,607	222,267	4,484	642	2,043	14,991	42,539			
	August	14,302	5,936	1,396	204,960	3,343	567	1,917	12,550	48,333			
	September	12,645	4,871	1,230	176,948	3,217	949	1,702	10,762	83,672			
	October	14,444	5,464	1,936	205,779	3,473	480	2,211	10,514	101,762	318		
	November	13,468	5,285	1,302	201,917	2,590	424	2,175	9,591	95,523	626		
	December	11,776	4,289	1,132	138,599	2,558	530	1,539	7,520	82,088	3,908		
1918	January	11,271	4,972	1,564	150,490	2,827	589	2,070	4,741	79,760	4,141		
	February	14,470	6,322	1,235	172,991	2,911	692	1,591	6,110	74,156	4,518		
	March	13,869	6,077	1,524	191,959	2,443	458	2,136	5,663	84,747	7,877		
	April	15,396	5,924	1,934	135,409	2,470	894	1,934	3,748	87,336	11,806		
	May	15,374	6,304	1,693	152,933	2,783	831	2,160	3,959	87,467	24,518		
	June	14,197	5,905	1,562	139,528	2,717	339	1,035	2,863	74,208	37,732		
	July	15,338	6,379	1,978	132,525	3,062	533	2,373	2,471	77,983	58,434	2,982	
	August	13,533	5,508	1,260	120,293	2,859	711	1,679	1,854	68,215	129,355	15,317	
	September	13,852	5,325	1,445	116,111	2,507	359	1,874	1,982	64,753	158,294	28,017	496
	October	13,765	5,480	1,410	106,624	1,577	1,333	1,529	1,586	64,062	173,307	37,757	108
	November	12,235	5,126	1,378	88,298	2,474	791	1,137	1,812	50,717	189,907	39,875	360
	December	12,367	5,695	1,509	86,616	1,595	523	1,666	2,300	54,329	213,794	42,879	239
1919	January	13,251	6,311	1,151	73,987	1,818	609	1,324	1,201	55,055	280,356	41,427	239

PRODUCTION OF CRUDE PETROLEUM IN EASTERN KENTUCKY FIELDS FOR THE YEARS 1912-1919.

RUNS OF CUMBERLAND PIPE LINE CO.

Year	Month	Bbls.	Total Per Yr.	Average Per Day	Remarks
1912	September	38,417			
	October	37,756			
	November	39,271			
	December	40,343		1,298.2	
1913	January	41,982			
	February	36,751			
	March	39,194			
	April	38,794			
	May	42,716			
	June	39,068			
	July	48,119			
	August	49,766			
	September	52,328			Cannel City Pool,
	October	46,082			Morgan County.
	November	43,929			
	December	43,821	522,550	1,431.6	
1914	January	45,091			
	February	42,737			
	March	52,135			
	April	48,555			
	May	43,017			
	June	42,464			
	July	40,698			
	August	24,985			
	September	19,249			
	October	49,494			
	November	34,960			
	December	36,224	479,609	1,313.9	
1915	January	34,898			
	February	34,255			
	March	38,204			
	April	38,995			
	May	37,270			
	June	35,458			
	July	32,643			
	August	32,504			
	September	30,930			
	October	29,297			
	November	31,926			
	December	30,701	407,081	1,115.3	
1916	January	30,799			
	February	38,345			
	March	49,242			
	April	63,104			Cow Creek Pool,
	May	83,348			Estill County.
	June	76,469			
	July	85,973			
	August	125,799			Fitchburg District,
	September	136,659			Estill County.
	October	155,147			
	November	152,652			
	December	147,213	1,144,750	3,136.3	

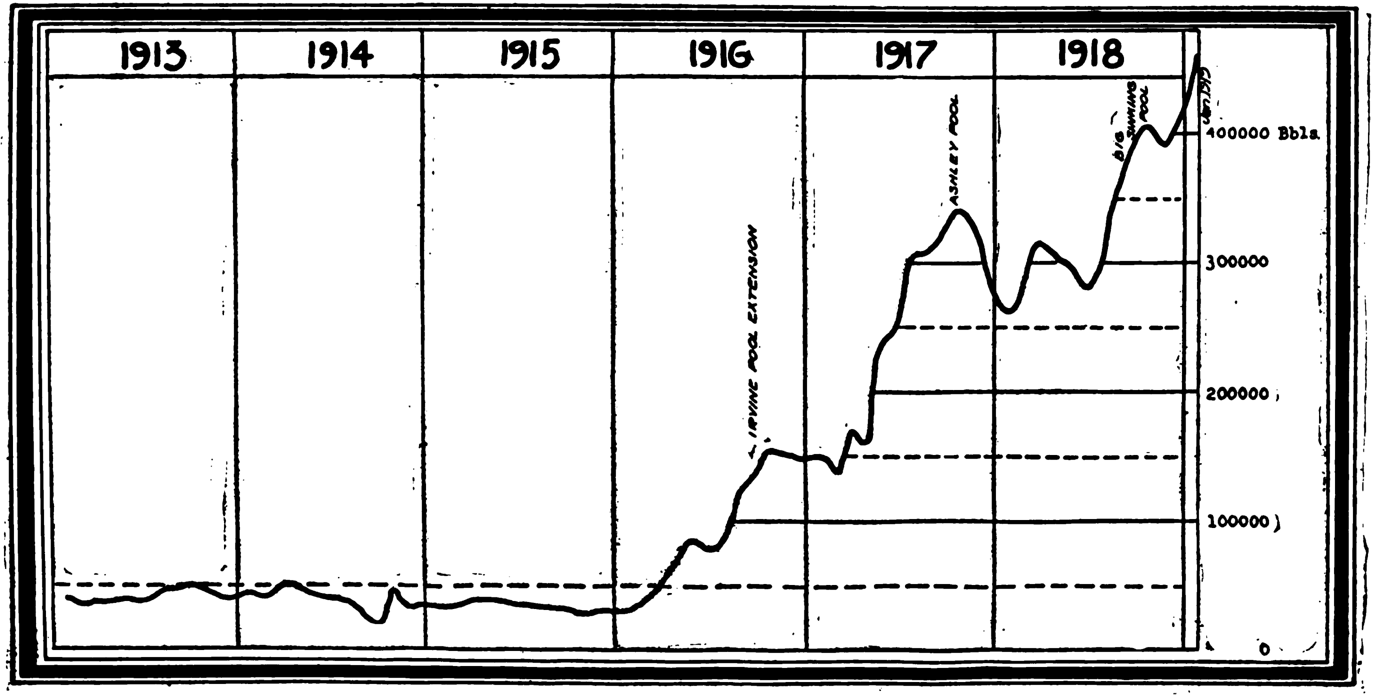
Year	Month	Bbls.	Total Per Yr.	Per Day Average	Remarks
1917	January	150,330			
	February	136,138			
	March	171,325			
	April	162,816			
	May	236,566			
	June	254,108			
	July	308,941			Ashley Pool,
	August	311,302			Powell County.
	September	323,897			
	October	346,381			
	November	332,898			
	December	280,938	3,015,640	8,262.0	
1918	January	262,424			
	February	285,995			
	March	316,753			
	April	306,849			
	May	298,022			
	June	280,087			Big Sinking Pool,
	July	304,058			Lee County.
	August	360,586			
	September	395,018			
	October	408,537			
	November	394,111			
	December	423,510	4,0[illegible]5,950	11,057.7	
1919	January	476,488		15,370.0	
	February			16,160.0	

1919 PRODUCTION, CUMBERLAND PIPE LINE RUNS BY MONTHS

Month	Total Runs Barrels	Average Daily Barrels
1919—January	476,488	15,370.0
1919—February	451,857	16,160.0
1919—March	485,588	15,680.0
1919—April	500,007	16,667.0
1919—May	481,439	15,530.0
1919—June	527,291	17,576.0

TANK CAR, ALLEN COUNTY CRUDE

Year	Barrels
1915	191.26
1916	27,616.23
1917	31,936.94
1918	20,990.86
1919 (2½ months)	1,774.57
Total barrels	82,509.86



CRUDE OIL PRODUCTION OF THE ESTILL-LEE-POWELL DISTRICT.

PIPE LINE RUNS, ALLEN COUNTY CRUDE
(Indian Refining Company)

Year	Scottsville	Rodemer	Total
1918	26,223.25	9,886.63	38,119.88
1919 (2½ months)	38,455.56	17,906.71	56,362.27
Total barrels			94,482.15

INDIAN REFINING COMPANY
Total Pipe Line and Tank Car Shipment From Allen County,
January-June, 1919

	Barrels
January	16,525.12
February	24,177.61
March	33,172.49
April	45,092.05
May	50,517.03
June	50,333.71
Total	219,818.01

SUMMARY CRUDE OIL PRODUCTION IN KENTUCKY
January-June, 1919
Cumberland and Indian Pipe Lines Only

	Barrels
Cumberland	2,922,670
Indian	219,818
Total	3,142,488

The total of 3,142,488 barrels of Kentucky crude oil for the first half of the year 1919 falls a little short of the actual amount which cannot exactly be obtained. A number of small transportation corporations take oil from both the eastern Kentucky and the Allen, Barren, Warren County fields, and the figures of their volume of business are not at the present forthcoming.

AN OIL PIPE LINE COMPETITOR.
A large amount of oil is now annually transported from Beattyville to Louisville Refineries via the Kentucky River. Photo by W. R. Jillson, June 25, 1919

VALUE OF PETROLEUM PRODUCED IN KENTUCKY
1904 TO 1919*

1904	$984,938
1905	943,211
1906	1,031,629
1907	862,396
1908	706,811
1909	518,299
1910	324,684
1911	328,614
1912	428,842
1913	675,748
1914	498,556
1915	418,357
1916	2,189,812
1917	8,029,216
1918	10,493,470
1919 (estimated)	19,500,000

The market price of Kentucky crude oil is now $2.70, this price covering all grades designated as, "Somerset." The single exception to this general statement is that of the small Ragland production which is designated by the same name and sells for $1.25 per barrel. The pe-

*Mineral Resources of United States, U. S. G. S.

troleum of Kentucky is for the most part light green in color; very fluid, high in gasoline content with a gravity which runs generally between 32 and 38 Baume scale. The extremes, however, are much wider apart. The lowest of record is 22 Baume, the sample oil specimen coming from the Ragland pool in Bath County. The highest of record is 51.6 Baume from Johnson County.

BAUME DENSITY OF KENTUCKY CRUDE PETROLEUM

	Lab. No.	Degrees Baume.
1.	43475—Allen County	30.
2.	36292—Probably Bath County	24.9
3.	36293—Probably Bath County	25.4
4.	36294—Probably Bath County	24.2
5.	36295—Probably Bath County	24.5
6.	36269—Probably Bath County	24.5
7.	36270—Probably Bath County	25.0
8.	36271—Probably Bath County	25.0
9.	36229—Probably Bath County	24.7
10.	36330—Probably Bath County	24.0
11.	36331—Probably Bath County	24.4
12.	36332—Probably Bath County	24.7
13.	36333—Probably Bath County	25.2
14.	36334—Probably Bath County	32.0
15.	36206—Probably Bath County	23.7
16.	25857—Probably Bath County	25.2
17.	14987—Morehead Oil & Gas Co.	22.5
18.	14565—"Ragland," Bath County	22.0
19.	14522—Yale Oil Company, Bath County	41.0
20.	14314—E. B. Fletcher, Powell County	22.0
21.	11964—From Bath County	22.6
22.	11190—Shouse Well, Hendrick Farm, Bath County	28.0
23.	10325—For J. B. Hoeing	35.5
24.	10241—John Williams, Lewis County	27.0
25.	10156—From Scottsville, Allen County	45.0
26.	9888—From Clinton County	41.0
27.	9749—Rose Run Iron Co., Bath County	33.0
28.	9750—From M. Carey Peter, Louisville	28.0
29.	9751—Lincoln County, near Stratford	32.0
30.	9431—From D. F. Frazee, Lexington	25.0
31.	9283—Isola Oil & Gas Co., Beech Grove, Ky.	28.0
32.	9238—Wood Richardson, Flemingsburg	38.9
33.	51656—Bowling Green, Warren County	38.9
34.	51839—Bowling Green, Warren County	38.5
35.	G-3785—Powell County	23.3

Lab. No.	Degrees Baume.
36. G-3786—Powell	32.8
37. Geol. Report, 2732—Lower Laurel Creek	34.1
38. 51656—From Bowling Green, Warren County	38.89
39. 51839—Mississippi Oil, Gas & Inv. Co., Bowling Green, Warren County	38.5
40. 56426—Dr. L. R. Henry, N. Middletown, Oil from (?) County	29.8
41. 56636—Leland Hanks, Lexington, Oil from (?) County	38.7
42. 56641—J. H. Harris, Versailles Oil Co., Lincoln County	22.2
43. 56667—H. L. Overall, Scottsville, Allen County	39.7
44. 56668—Addison Foster, Oil from Johnson County	51.6
45. G-3807—John Jackson Farm, Bowling Green, Warren Co.	38.89
46. G-3834—J. B. Winlock, Barren County	44.6
47. G-3841—Jordan Farm near Oil City, Barren County	39.5
48. G-3844—Pottsville Horizon, Magoffin County	22.0
49. G-3851—Drakes Creek, Warren County	36.7
50. G-3852—Tom Smith, Barren County	35.1

Range 22° to 51.6° Baume in 50 samples.

ALFRED M. PETER, Chief Chemist.

August 11, 1919.

DISTILLATION RECORDS OF KENTUCKY CRUDE OIL

RECORD No. 1. SCOTTSVILLE, ALLEN COUNTY, KY., CRUDE

Initial Boiling Point 300 — Gravity Baume 26.0
Temp. Condenser 80 — Maximum Boiling Point 650

Per Cent Off.	Temp. "F"	Gravity Be.	Per Cent Off.	Temp. "F"
10	350	42.8	....	212
20	425	38.4	3.0	300
30	522	35.5	10.0	350
40	580	33.0	13.0	365
50	620	31.6	15.0	375
60	640	30.6	19.0	400
70	650	30.5	22.0	460
80	....	....	26.0	500
90	....	....	68.0	650
98	....	....	....	....

Per Cent Total Recovery ....
Loss in Gravity ....

32% Bottoms. 15.8 Grav.

(Signed) W. EXTON.

August 30, 1918.

RECORD NO. 2. BEATTYVILLE, LEE COUNTY, KY., EASTERN GULF OIL CO. CRUDE

Initial Boiling Point 100 — Gravity Baume 42.5
Temp. Condenser 64 — Maximum Boiling Point 560

Per Cent Off.	Temp. "F"	Gravity Be.	Per Cent Off.	Temp. "F"
10	202	78.6	12.0	212
20	270	63.0	24.4	300
30	398	54.1	31.0	350
40	438	48.1	32.2	365
50	540	41.3	33.6	375
60	....	....	36.6	400
70	....	....	42.6	460
80	....	....	46.0	500
90	....	....	54.0	560
98	....	....	....	....

Per Cent Total Recovery ....
Loss in Gravity ....

46% Bottoms. No. Loss.

(Signed) L. H. LANG.

Oct. 23, 1918.

RECORD NO. 3. ESTILL COUNTY, KY., CRUDE

Initial Boiling Point 180 — Gravity Baume 34.8
Temp. Condenser 34 — Maximum Boiling Point 89% @ 750

Per Cent Off.	Temp. "F"	Gravity Be.		Per Cent Off.	Temp. "F"
10	260	63.8	Flash @ Temp.	3.0	212
			Chill 0/?		
20	328	55.0		....	300
30	400	48.5		23.2	350
40	476	41.5	Sulphur	25.6	365
50	550	37.2	Determinations	27.0	375
60	626	33.2	.520%	30.0	400
70	676	29.9	Hamilton Oil	38.0	460
80	730	28.3		44.4	500
90	750	26.6		50.0	550
98	....	....		....	....

Per Cent Total Recovery ....
Loss in Gravity ....

11% Bottoms. No. Loss.

(Signed) R. F. B.

May 22, 1919.

RECORD NO. 4. LINCOLN COUNTY, KY., DANIEL BOONE OIL CO.'S CRUDE

Initial Boiling Point 194 — Gravity Baume 32.4
Temp. Condenser 66 — Maximum Boiling Point 600

Per Cent Off.	Temp. "F"	Gravity Be.		Per Cent Off.	Temp. "F"
10	230	54.8		.2	212
20	388	49.8		5.2	300
30	454	44.4		14.2	350
40	518	39.9		16.7	365
50	584	36.3		18.4	375
60	600	....	2000 bbls. in storage	22.0	400
70	....	....		31.8	460
80	....	....		38.0	500
90	....	....		56.0	600
98	....	....		....	....

Per Cent Total Recovery ....
Loss in Gravity ....

44% Bottoms. No. Loss.

(Signed) L. H. LANG.

Oct. 11, 1918.

RECORD NO. 5. LINCOLN COUNTY, KY., DANIEL BOONE OIL CO., CRUDE

Initial Boiling Point 128 — Gravity Baume 37.0
Temp. Condenser 70 — Maximum Boiling Point 650

Per Cent Off.	Temp. "F"	Gravity Be.	Per Cent Off.	Temp. "F"
10	226	69.5	8.2	212
20	282	59.0	22.6	300
30	350	52.8	30.0	350
40	432	45.7	32.4	365
50	514	39.8	33.8	375
60	596	35.8	36.4	400
70	640	33.3	43.6	460
80	650	33.0	49.0	500
90	....	....	61.0	600
98	....	....	....	....

Per Cent Total Recovery ....
Loss in Gravity ....

20% Bottoms. No. Loss.

(Signed) L. H. LANG.

Oct. 8, 1918.

RECORD NO. 2. BEATTYVILLE, LEE COUNTY, KY., EASTERN GULF OIL CO. CRUDE

Initial Boiling Point 100 — Gravity Baume 42.5
Temp. Condenser 64 — Maximum Boiling Point 560

Per Cent Off.	Temp. "F"	Gravity Be.	Per Cent Off.	Temp. "F"
10	202	78.6	12.0	212
20	270	63.0	24.4	300
30	398	54.1	31.0	350
40	438	48.1	32.2	365
50	540	41.3	33.6	375
60	....	....	36.6	400
70	....	....	42.6	460
80	....	....	46.0	500
90	....	....	54.0	560
98	....	....	....	....

Per Cent Total Recovery ....
Loss in Gravity ....

46% Bottoms. No. Loss.

(Signed) L. H. LANG.

Oct. 23, 1918.

RECORD NO. 3. ESTILL COUNTY, KY., CRUDE

Initial Boiling Point 180 — Gravity Baume 34.8
Temp. Condenser 34 — Maximum Boiling Point 89% @ 750

Per Cent Off.	Temp. "F"	Gravity Be.		Per Cent Off.	Temp. "F"
10	260	63.8	Flash @ Temp. Chill 0/?	3.0	212
20	328	55.0		....	300
30	400	48.5		23.2	350
40	476	41.5	Sulphur	25.6	365
50	550	37.2	Determinations	27.0	375
60	626	33.2	.520%	30.0	400
70	676	29.9	Hamilton Oil	38.0	460
80	730	28.3		44.4	500
90	750	26.6		50.0	550
98	....	....		....	....

Per Cent Total Recovery ....
Loss in Gravity ....

11% Bottoms. No. Loss.

(Signed) R. F. B.

May 22, 1919.

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Initial Boiling Point 194 — Gravity Baume 32.4
Temp. Condenser 66 — Maximum Boiling Point 600

Per Cent Off.	Temp. "F"	Gravity Be.		Per Cent Off.	Temp. "F"
10	230	54.8		.2	212
20	388	49.8		5.2	300
30	454	44.4		14.2	350
40	518	39.9		16.7	365
50	584	36.3		18.4	375
60	600	....	2000 bbls. in storage	22.0	400
70	....	....		31.8	460
80	....	....		38.0	500
90	....	....		56.0	600
98	....	....		....	....

Per Cent Total Recovery ....
Loss in Gravity ....

44% Bottoms. No. Loss.

(Signed) L. H. LANG.

Oct. 11, 1918.

RECORD NO. 5. LINCOLN COUNTY, KY., DANIEL BOONE OIL CO., CRUDE

Initial Boiling Point 128 — Gravity Baume 37.0
Temp. Condenser 70 — Maximum Boiling Point 650

Per Cent Off.	Temp. "F"	Gravity Be.	Per Cent Off.	Temp. "F"
10	226	69.5	8.2	212
20	282	59.0	22.6	300
30	350	52.8	30.0	350
40	432	45.7	32.4	365
50	514	39.8	33.8	375
60	596	35.8	36.4	400
70	640	33.3	43.6	460
80	650	33.0	49.0	500
90	....	....	61.0	600
98	....	....	....	....

Per Cent Total Recovery ....
Loss in Gravity ....

20% Bottoms. No. Loss.

(Signed) L. H. LANG.

Oct. 8, 1918.

Analyses of Kentucky Crude Oil By State Chemist

Analysis No. 1.

Laboratory No. G-3851.—Petroleum labeled "Green Oil Waverly Stray horizon, above Black Shale, on Drake's Creek, Warren County, Ky. V. Humbrecht, lessee. Depth 115 ft. Collected by W. R. Jillson, Aug. 2, 1919." Sample a rather thin, green oil, dark brown by transmitted light.

Specific gravity by hydrometer at 60° F., 0.840=36.7° Baume.

Distilled below 150° F. (gasoline fraction)	20.0%
Distilled between 300 and 572° F. (burning oil fraction)	36.5%
Residue of thick, brown oil	42.8%
Loss on distillation	0.7%
Total	100.0%

Percentage by volume.
(Analysis by A. M. Peter.)
Aug. 11, 1919. ALFRED M. PETER, Chief Chemist.

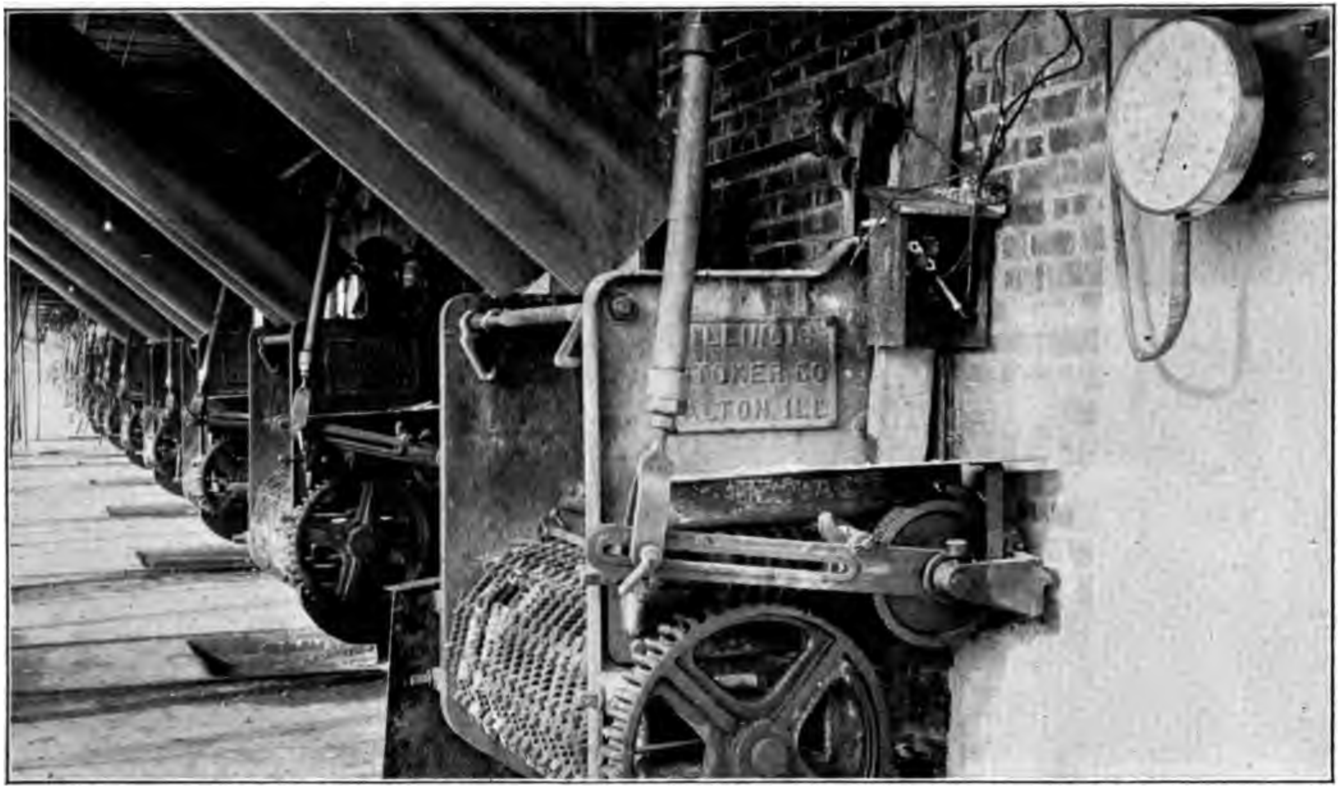
Analysis No. 2.

Laboratory No. G-3844.—Black oil, Pottsville horizon, Magoffin County, Ky., Short Fork of Burning Fork of Licking River. Collected by W. R. Jillson, January 2, 1918. Sample a thick, dark brown oil.

Specific gravity at 60° F., .921 or 22° B.

	Per Cent by Volume
Distillate below 150° C. (302° F.) gasoline fraction	trace
Distillate from 150 to 300° C. (302-572° F.) burning oil fraction	32.
Thin tar, by difference	68.
	100.

On continued heating, until coke began to form in the flask, 84.5 per cent. of distillate was obtained.
Analysis by A. M. Peter and S. D. Averitt.
June 3, 1919. ALFRED M. PETER, Chief Chemist.



AUTOMATIC REFINERY STOKERS.
The view shows a battery of twenty mechanical stokers in the "Riverside Plant" of the Standard Oil Refinery Company, located at Louisville, Kentucky. Photo by W. R. Jillson, April 20, 1919.

Analysis No. 3.

Laboratory No. G-3857—Petroleum labeled "Crude oil produced by the Great Central Company, Prestonsburg, from a well at the mouth of Middle Creek, Floyd County, Ky. Collected by W. R. Jillson, October 29, 1918. From the Weir sand, 1425 ft."

Sample, a thick, green oil.

Specific gravity at 60° F., 0.877, equivalent to 29.6° Baume.

Distilled below 150° C. (302° F.)	none
Distilled between 150° and 300° C. (302-572° F.)	32.8%
Thick, oily residue	66.7%
Total	99.5%

Began to distill at 160° C. (320° F.).

ALFRED M. PETER.
Chief Chemist.

(Analysis by A. M. Peter.)
Sept. 4, 1919.

Analysis No. 4.

Laboratory No. G-3856—Petroleum labeled "Green oil from the Cumberland Pipe Line at Ivyton, Magoffin County, Ky. Collected by W. R. Jillson, 1918. (Specimen was exposed to air.)"

Sample, a thin, green oil.

Specific gravity at 60°F., 0.835, equivalent to 37.7° Baume.

Distilled below 150° C (302° F.)	20.0%	(Gasoline fraction)
Distilled between 150° and 300°C. (302-572° F.)	31.0%	(Burning oil fraction)
Thick, oily residue	49.0%	
Total	100.0%	

Began to distill at 65° C. (149° F.)

ALFRED M. PETER, Chief Chemist.

(Analysis by A. M. Peter.)
Sept. 4, 1919.

Analysis No. 5.

Laboratory No. G-3855—Petroleum, labeled "Green oil from the Major wells, west of Leitchfield, Grayson County, Kentucky, Carl Dresser, operator. Collected by

W. R. Jillson, August 26, 1919. Oil horizon a Waverly 'stray sand.' " Sample from open tank and probably old pumping in part.

Sample, a rather thin, slightly greenish oil, dark brown by transmitted light.

Specific gravity at 60° F., 0.8785, equivalent to 29.4° Baume.

Distilled below 150° C. (302° F.)	7.4%	(Gasoline fraction)
Distilled between 150° and 300° C. (302-572° F.)	33.5%	(Burning oil fraction)
Tarry residue	59.0%	
Total	99.9%	

Began to distill at 85° C. (185° F.).

ALFRED M. PETER, Chief Chemist.

(Analysis by A. M. Peter.)
Sept. 4, 1919.

Analysis No. 6.

Laboratory No. G-3854—Petroleum, labeled "Green oil from S. R. Moffit well, west of Leitchfield, Grayson County, Ky., Carl Dresser, lessee. Collected by W. R. Jillson, August 26, 1919. Oil horizon a Waverly 'stray sand.' " Sample had been exposed to air a few days.

Sample a thick, slightly greenish oil, very dark brown by transmitted light.

Specific gravity at 60° F., 0.870, equivalent to 30.9° Baume.

Distilled below 150° C. (302° F.)	3.8%	(gasoline fraction)
Distilled between 150° and 300° C. (302-572° F.)	34.5%	(Burning oil fraction)
Heavy, tarry residue	61.5%	
Total	99.8%	

Began to distill at 116° C. (241° F.)

ALFRED M. PETER, Chief Chemist.

(Analysis by A. M. Peter.)
Sept. 4, 1919.

Analysis No. 7.

Laboratory No. G-3861—Petroleum labeled "Lessor (Dr.) Hunter. Lessee, Duplex Oil Co., 3 miles west of Bowling Green, Warren County, Ky. 960 feet, total

depth." Received from W. R. Jillson, State Geologist, September 15, 1919.

ANALYSIS.

Specific gravity 0.834 at 60° F., equivalent to 37.9° B.

Distilled below 150° C. (302° F.)	20.2%	(Gasoline fraction)
Distilled from 150° to 300° C. (302-572° F.)	32.0%	(Burning oil fraction)
Thick, brown tar	45.0%	
Loss in analysis	2.8%	
	100.0%	

The oil began to distill at 65° C. (149° F.)

ALFRED M. PETER, Chief Chemist

(Analysis by A. M. Peter.)
Sept. 19, 1919.

Analysis No. 8.

Laboratory No. G-3865—Petroleum labeled "Fresh, green oil, Joe B. Sumpter, No. 1, Mrs. Gray, lessee, ½ mile W. of Bowling Green, Warren Co., Ky. Oil at 880-900 ft., total depth 920 ft. Oil horizon, Niagara. Collected by W. R. Jillson, Sept. 14, 1919." Received from W. R. Jillson, State Geologist, September 15, 1919.

ANALYSIS.

Specific gravity at 60° F., 0.865, eqivalent to 31.9° B.

Distilled below 150° C. (302° F.)	9.3%	(Gasoline fraction)
Distilled from 150° to 300° C. (302-572° F.)	37.5%	(Burning oil fraction)
Tarry residue	52.5%	
Loss in analysis	0.7%	
	100.0%	

The oil began to distill about 80° C. (176° F.)

ALFRED M. PETER, Chief Chemist.

(Analysis by A. M. Peter.)
Sept. 19, 1919.

Analysis No. 9.

Laboratory No. G-3864—Petroleum, labeled "(d) Green oil, Maj. R. W. Covington, No. 1, 355 ft. above

shale, ½ mile southeast of Bowling Green, Warren Co., Ky. Sept. 15, 1919." Received from W. R. Jillson, State Geologist, September 15, 1919.

ANALYSIS.

Specific gravity at 60° F., 0.854, equivalent to 33.9° B.

Distilled below 150° C. (302° F.)	13.0%	(Gasoline fraction)
Distilled from 150° to 300° C. (302-572° F.)	36.5%	(Burning oil fraction)
Tarry residue	50.0%	
Loss in analysis	0.5%	
	100.0%	

The oil began to distill at 75° C. (167° F.)

ALFRED M. PETER, Chief Chemist.

(Analysis by A. M. Peter.)
Sept. 19, 1919.

Analysis No. 10.

Laboratory No. G-3863—Petroleum labeled "Green oil, open steel tank. Horace Bohon, No. 1. A. Goldstein, lessee. 840 ft. deep, below shale. 1 mile E. of Bowling Green, Warren County, Ky. Collected by W. R. Jillson, Sept. 14, 1919." Received from W. R. Jillson, State Geologist, September 15, 1919.

ANALYSIS.

Specific gravity at 60° F., 0.856, equivalent to 33.6° B.

Distilled below 150° C. (302° F.)	13.0%	(Gasoline fraction)
Distilled from 150° to 300° C. (302-572° F.)	36.5%	(Burning oil fraction)
Tarry residue and loss by difference	50.5%	
	100.0%	

The oil began to distill at 70° C. (158° F.)

ALFRED M. PETER, Chief Chemist.

(Analysis by A. M. Peter.)
Sept. 19, 1919.

Analysis No. 11.

Laboratory No. G-3862—Petroleum labeled "Green oil from J. A. Hamilton & Co., Wayne O'Neil, lessee, ½ mile N. E. of Bowling Green, Warren County, Ky. Oil

horizon, Onondaga and Niagara limestones. Depth 850 ft. Collected by W. R. Jillson, September 14, 1919." Received from W. R. Jillson, State Geologist, September 15, 1919.

ANALYSIS.

Specific gravity at 60° F., 0.856, equivalent to 33.6° B.

Distilled below 150° C. (302° F.)	14.5%	(Gasoline fraction)
Distilled from 150° to 300° C. (302-572° F.)	34.5%	(Burning oil fraction)
Tarry residue	50.5%	
Loss in analysis	.5%	
	100.0%	

The oil began to distill at 65° C. (149° F.)

ALFRED M. PETER, Chief Chemist.

(Analysis by A. M. Peter.)
Sept. 19, 1919.

Kentucky Natural Gas

The natural gas production of Kentucky is but partially commercialized for lack of extension pipe lines from the various developed gas fields to the trunk pipe lines. Crossing the State from east to west are two main trunk pipe lines. One of these, the Kentucky Pipe Line—a twelve-inch line—extends from Inez, in Martin County, to the city of Louisville which it serves through the Louisville Gas and Electric Company. This line is supposed to carry twelve million cubic feet of natural gas daily, but probably, as a matter of fact, carries somewhat less. The line was laid and connected in 1907 and the first gas carried by it came from both the Martin County field and West Virginia sources. However, during the last twelve years, the Martin County field has shown considerable and rapid decline in both rock pressure and volume and for this reason an increasingly larger supply has been taken from the West Virginia compressor Station at Kermit on the Tug Fork of the Big Sandy River.

NATURAL GAS COMPRESSION STATION AT KERMIT, W. VA.

This important transportation station is located at Kermit just across the Tug Fork of the Big Sandy River, from Martin County. It is owned and operated by the United Fuel Gas Company. Photo by A. M. Miller.

THE CENTRAL KENTUCKY NATURAL GAS PIPE LINE

The second of these large trunk gas lines, that of the Central Kentucky Natural Gas Pipe Line Company, extends from Inez, in Martin County, to Lexington and, by extension, to Frankfort. This gas has within the last eight months connected, as a source of additional supply from eastern Kentucky, the newly developed gas fields of Paint Creek in Johnson and Magoffin Counties, and Laurel Creek of Johnson and Lawrence Counties. The Paint Creek extension is four-inch tubing. The Laurel Creek extension is six-inch tubing. Compressors are already working on the Laurel Creek line and will soon be in operation on the Paint Creek line. It is estimated that the Central Kentucky Natural Gas Company is now taking between two and three million cubic feet volume of gas from these two new fields combined. This amount does not in any, except a small way, indicate what the capacity of these two gas structures will be when they are fully developed and connected to the compressor stations. Further to the west this main trunk gas line connects with the Menifee gas field where a large com-

pressor station is located. This pipe line serves, besides the larger cities of Frankfort and Lexington, the smaller cities of Mt. Sterling, Paintsville, Versailles, Midway, Winchester and Paris.

The Central Kentucky Natural Gas Pipe Line Company's line from Inez to Lexington is 10 inches. From Lexington the line is 8-inch to the Versailles "cut in" and from there on 6 inches to Frankfort. This line from Lexington to Frankfort and Versailles is owned and operated by the Frankfort Natural Gas Company. Between six and nine million cubic feet volume of gas is transported daily by the Central Kentucky Natural Gas main trunk pipe line. Aside from the two or three million cubic feet of gas now being taken by this company from the new Paint Creek and Laurel Creek fields in Johnson, Magoffin and Lawrence Counties, the greater part of the gas comes from West Virginia, through the Kermit compressor station. The Menifee field, once the principal source of supply of this pipe line, is now a very small contributor or simply a ready reserve supply. The Menifee-to-Lexington line was first installed in 1905 and was continued further eastward to Inez in 1912. The Paris extension was made in 1913 and the Frankfort extension was connected up in the fall of 1915.

VALUE OF PRODUCTION OF NATURAL GAS IN KENTUCKY FROM 1889 TO 1919.*

1889	$2,580
1890	30,000
1891	38,993
1892	43,175
1893	68,500
1894	89,200
1895	98,700
1896	99,000
1897	90,000
1898	103,133
1899	125,745
1900	286,243
1901	270,871
1902	365,611
1903	390,601
1904	322,404

*Mineral Resources of United States. U. S. G. S.

1905	$237,590
1906	287,501
1907	380,176
1908	424,271
1909	485,192
1910	456,293
1911	407,689
1912	522,455
1913	509,846
1914	490,875
1915	614,998
1916	752,635
1917 (estimated)	902,635
1918 (estimated)	1,052,000
1919 (estimated)	1,275,000

Gas Analysis

No. 1.—Sample taken from Jason Boggs, No. 1, Cain's Creek, Lawrence County, Ky., June 1, 1917. Well drilled by Clinton Oil and Gas Co. Analysis submitted by H. E. Holt, Huntington, W. Va.

Specific gravity (H=1)	10.16
Carbon dioxide	.14%
Oxygen	.36%
Light naphtha per 1,000 cu. ft.	1.10 gal.
Probable recovery of light naphtha per 1,000 cu. ft. of gas by compression	none

(Signed) H. H. CRAVEN, Chief Chemist,
Pittsburg Testing Laboratory, Pittsburg, Pa.

Geographic Location of Kentucky Natural Gas

The greatest natural gas province of Kentucky will always be the eastern portion of the State. Some gas production has been secured at a number of widely distributed points and some of the southern-central counties have materially increased their gas development during the past year. Yet none of this newer gas area promises anything like the established territories of eastern Kentucky. The facts in the case are these: besides Menifee and Martin there are at least a full dozen or fifteen counties in the eastern coal field which with careful scientific and systematic development may be looked upon as a great gas reserve. It is an assured fact that sufficient

natural gas for conserved domestic consumption in Kentucky may be secured from this now partly developed group of gas fields for a great many years.

Since it is admitted by both the practical and the theoretical oil and gas producer that the drill is the ultimate agent in determining the occurrence of oil or gas in commercial quantity in the deep rocks, it will not be difficult for the layman to accept the facts presented by completed prospecting drillings in various parts of eastern Kentucky. Without going into a length of tedious detail, which could scarcely add anything to the accuracy of this statement, it is a demonstrable fact that enough large gas wells have been drilled in Morgan, Lawrence, Elliott, Johnson, Magoffin, Floyd, Pike, Breathitt, Knott, Perry, Owsley, Wolfe and Knox Counties to demonstrate beyond doubt the justice of the claims of these above named counties to widespread recognition as a great untapped commercial natural gas reserve. In these counties absolute figures based upon accurate measurements will show at the present time not less, and probably more, than 40,000,000 cubic feet of natural gas in open flow at the tubing head. Eight gas structures alone in eastern Kentucky taken together show a measured open flow volume of 28,230,000 cubic feet of natural gas. Out of this large amount about four million feet have just recently been taken over by the Central Kentucky Natural Gas Co. Considered as a whole, however, of this forty million cubic feet "index" gas probably not one-tenth is serving any commercial purpose. The most of it remains "shut in" and unused, for the operators who drilled it in were searching for crude oil or petroleum and had no use for the gas. To what commercial maximum volume this "index" 40,000,000 cubic feet may be increased it is at present impossible to say, but the figures will be many times greater than the "index" volume. The larger part of this gas is located at some distance from any public service trunk pipe line, and therefore is at the present time of slight commercial importance except as an "index" to producing possibilities.

QUANTITATIVE EVALUATION OF TEN PROVED NATURAL GAS STRUCTURES IN EASTERN KENTUCKY IN THE COUNTIES OF FLOYD, KNOTT JOHNSON MAGOFFIN AND MORGAN.*

No.	Name of Structure.	Producing Sand	Present Open Flow. By Gauge.	Estimated Possible Open Flow.	Approx. Depth Below Surface.
1	Yellow Mountain Anticline Knott County.	Big Lime	4,680,000	20,000,000	1,630
2	Beaver Creek Anticline. Floyd County.	Maxon-Berea Big Injun	8,700,000	35,000,000	850-2,000
3	Steel's Creek Dome. Floyd County.	Maxon	2,800,000	8,000,000	900
4	Prestonsburg Anticline. Floyd County.	Big Injun Wier-Berea	500,000	2,000,000	1,428
5	Bull Creek Anticline. Floyd County.	Big Injun	1,050,000	6,000,000	1,300
6	Ivyton Dome. Magoffin-Johnson	Pottsville Wier	500,000	3,000,000	350
7	Rockhouse Anticline. Magoffin County.	Wier Corniferous	....	7,000,000	1,500
8	Paint Creek Dome. Magoffin-Johnson	Wier Corniferous	10,000,000	15,000,000	700 1,600
9	Laurel Creek Dome. Johnson County.	Big Injun Wier-Berea	6,000,000	15,000,000	700-1,600
10	White Oak Anticline. Magoffin-Johnson.	Corniferous Big Injun Wier-Berea	....	10,000,000	600 1,500
	Total present Vol. open flow cu. ft.		34,230,000		
	Total estimated reasonably possible volume open flow in cubic feet		....	121,000,000	

*NOTE.—The data presented in the above table is taken from a private report on natural gas of Eastern Kentucky prepared by the author for the city of Louisville in December, 1918. A few minor corrections have been made to bring the production figures up to date.

CHAPTER III.

THE ORIGIN OF PETROLEUM AND NATURAL GAS.

Historical references to petroleum and natural gas may be found among the earliest written records of man. There is probably no doubt but that the earliest nations knew and used these two now famous natural hydrocarbons, tho little is to be found in written records concerning them. Despite this early knowledge, little progress has been made by man, even to the present day, when these two substances have come to take such an important economic value, in determining their ultimate source and origin. Altho we know a great deal about their chemical constituency, their interrelations and commercial grades, we are not much wiser concerning the source of petroleum and natural gas than were our very earliest ancestors. Many suggestions and hypotheses have been advanced by various scientists, around whom have been developed schools of ardent advocates, but up to the present time no one explanation of source has been universally accepted, nor have claims passed beyond the stage of theory. As a matter of fact, most of these views of origin or source are based upon chemical relations developed in laboratories in a small sort of way during a comparatively short time, and are therefore not directly comparable to the means or the scale or the time employed for the production of these hydrocarbons in the natural way. It is, therefore, perhaps wise to simply present the principal facts and theories of this subject and allow the reader to form, if he wishes, his own conclusion.

The theories of source or origin of petroleum and natural gas may be generally separated into two divisions:

(1) Those views which attribute an inorganic origin.

(2) Those attributing organic origin.

The Inorganic Theory.

It may be well to state at the outset that the promulgators of this, the inorganic theory of the origin of petroleum and natural gas, were for the most part men who were chemists and who actually knew very little of the geologic conditions which surround the occurrence of oil and gas in the natural condition in the earth's crust. As far as the writer is informed, the men who are advocating this, the inorganic theory, depend entirely upon chemical proofs and chemical hypotheses. Very few, if any, oil and gas geologists have ever endorsed this explanation of origin, and it would seem that this fact alone must serve to condemn the theory to some extent. Had there been any indications of its application in a practical way, it seems reasonable to suppose that such application would have been noted and developed at least theoretically long ago.

The two promulgators of the inorganic theory may be said to be the distinguished French chemist, Berthelot, and the brilliant Russian chemist, Mendeljieff. Berthelot did his work and advanced his ideas in 1866. He assumed that the alkali metals, potassium and sodium, existing uncombined and at high temperatures in the interior of the earth, produced a series of hydrocarbons whenever underground waters, carrying carbon in solution, found access to them. His idea was that the production of petroleum and natural gas would continuously take place at from moderate to great depths within the earth's crust, in the entire absence of organic substances. Mendeljieff assumed the interior of the earth to be composed of great masses of metallic carbides and iron at a high temperature. His theory conceived the production of metal oxides and hydrocarbons upon the contact of water with these aforenamed substances. His theory, like Berthelot's, was one which allowed the assumption of a more or less continuous small production of petroleum and natural gas as long as the supply of metallic carbide was available.

Both of these theories presupposed the continual generation of the hydrocarbons, constituting the petroleum and natural gas, as long as the source substances

remained, a fact which has never been substantiated by the history of producing fields. Advocates of the inorganic theory today claim that the generation of these hydrocarbons requires a much greater length of time than that which has been allotted by the practical observer of oil and gas fields. They point, with a measure of pride, to the somewhat puzzling conditions of occurrence of petroleum and natural gas in Mexico and portions of the Gulf Coastal Plain of the United States. While it is true that in these localities of oil and gas there are igneous formations, hot water, sulphur and salt, and while it is also a fact that we do not today thoroughly understand the full geologic conditions of the actual details of their occurrence in these fields, it may be pointed out that the reference to these fields as a proof of the inorganic theory is entirely unacceptable for world-wide conditions do not parallel this cited mode of occurrence.

THE ORGANIC THEORY.

Many theories have been advanced by both chemists and geologists to account for the origin and source of petroleum and natural gas on an organic basis. Perhaps one of the first men to make this suggestion was von Buch, who in 1803 offered the suggestion that the bituminous content of the Liassic shales of Wurtemburg came from an animal and vegetable source. On the basis of general conditions, it is assumed that since most of the petroleum of the world is derived from marine sediments, the organisms producing hydrocarbons are also of marine origin. A number of chemical tests have been made by chemists of ability, which go to show the possibility of this mode of origin.

In 1865 Warren and Storer, in distilling a fish oil, showed that it could be broken up into hydrocarbon constituents parallel to those of petroleum and natural gas. Up to the present, the chemical side of the organic theory has come thru with its case clear. Geologists for the most part have favored this theory, generally because they have found the oil associated in sediments which contain large numbers of marine fossils. Unfortunately, however, no large degree of real or positive proof has

ever been obtained by the geologists to show conclusively that this was the method of occurrence.

In the Appalachian oil field of the eastern United States, of which Kentucky forms the southwest portion, the oil and gas sands are shown imbedded within large masses of shale. This is especially true in the Devonian System, but is also the case in the Mississippian and the Pennsylvanian Systems. The question arises, if the oil found its source in the shales, how did it get into the sands or the limestone imbedded within the shale? This will be settled in another place. The fact remains that the geologists and chemists have proved that the shales do at the present time contain large amounts of undistilled (thru natural processes) hydrocarbons, and whatever may have become of the myriad of fossiliferous tests or casts of the producing organisms really makes very little difference.

However, if concrete evidence is desired, at least one admirable instance of the occurrence of oil in extremely fossiliferous bodies may be cited. In Southern California the oil occurs in a series of diatomaceous shales of from 1,000 to 2,500 feet in thickness. These diatomaceous shales do not now contain oil, but the intervening sandstones, acting as reservoirs for the accumulated petroleums, do. In this field, at least, the association of the oil with these diatomaceous formations has been so clearly interpreted and explained that it is now serving as a reliable guide in the location of new oil and gas fields. While this particular occurrence may be looked upon as a practical proof of the organic animal theory of origin, at least for this particular field, it may not be too broad a suggestion to refer the same possibility to the great oil shales of Colorado and Utah and some of the other western states. It may, however, be noted that proof as definite as that found in Lower California is still lacking for these other localities.

A recent renewal of interest in the optical properties of petroleum has definitely shown that the rotation of the polarized ray which is produced by petroleum is parallel to, if not exactly the same as that of cholesterol from animal fats and phytosterol from vegetable fats. It is now generally agreed that the optical activity of petroleum is due to these two substances, cholesterol and phyto-

sterol. This final and rather conclusive evidence leads the modern observer to assume that the great majority of mineral oils and gases are derived during long periods of time and at rather low temperatures from the decomposition of the fatty substances of plants and animals. Under such an hypothesis, the nitrogenous properties of both the plants and the animals would automatically be removed by the action of bacteria soon after the death of the organisms. While it may be supposed that the terrestial fauna and flora may have contributed somewhat to the origin of petroleum and natural gas, it must, on the basis of the actual sources of thee hyprocarbons, be assumed that the greatest agency of formation has been marine life, animal and vegetable.

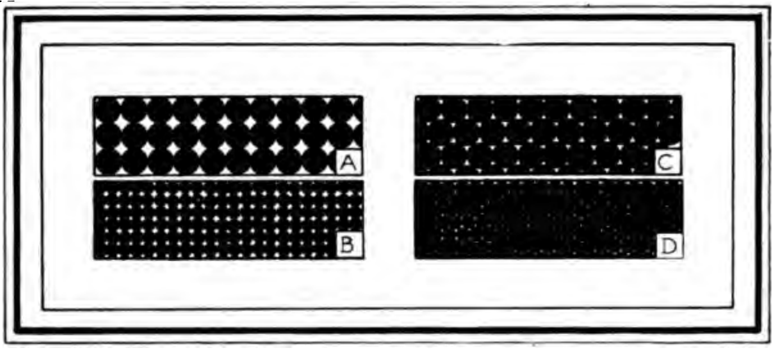
To sum up then: (a) The evidence now afforded seems to favor the animal origin of petroleum and natural gas. (b) It is undoubtedly true that the marine plants have contributed a large portion of the fatty or oily material. (c) Geologic and optical proofs and evidences are, for the most part, decidedly opposed to the inorganic origin of petroleum, but this does not preclude the idea that there may be some relation between the igneous bodies of some of the oil fields and the large accumulations of petroleum and natural gas associated with them.

Movement of Oil Thru the Rocks, and Conditions of Accumulation.

From the standpoint of a practical producer, it is somewhat immaterial as to just what has been the actual source of formation of the oil and gas hydrocarbons. All competent writers on the subject are agreed that whatever the source may have been, the oils are not now always found in the same place in the rocks in which they were originally assembled. This statement presupposes migration of both petroleum and natural gas, a very demonstrable fact. Since oil and gas have moved from their original positions, it is of importance to the practical man to understand the conditions necessary for such movement. He must be able to interpret the specific conditions in the geologic formations which have brought about the migration and the accumulation into oil and gas

pools. As a general thing, one should understand that migration has of course preceded accumulation.

There are three forces which are generally considered effective under most conditions in producing the migration of oil and gas in underground sedimentary strata. These are: (a) gravity, (b) capillary attraction, (c) difference in specific gravity of gas, oil and water. Let us



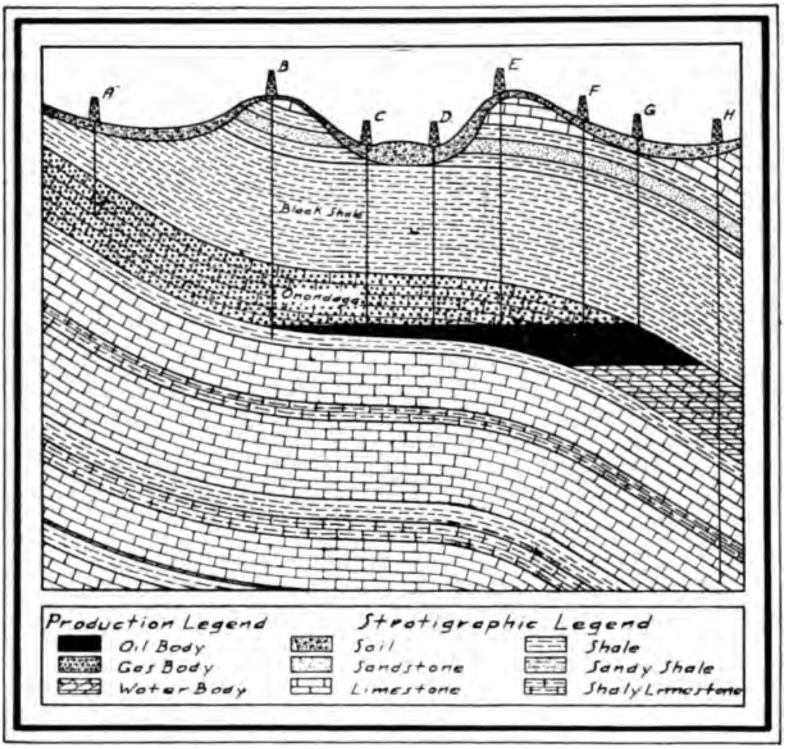
DIAGRAMS ILLUSTRATING THEORETICAL POROSITY

A—Maximum pore space, large spheres; B—Maximum pore space, small spheres; C—Minimum pore space, large spheres; D—Minimum pore space, small spheres.

take these up separately. Oil and gas, in the rocks of the earth's crust are, as we might suppose, affected by the force of gravity like all other substances. But as the force of gravity on oil and gas in a greatly disseminated condition may be understood to be very weak, it must be assumed that movement could only be brought about by this force acting separately and through a long period of time. The lithologic conditions of the containing strata would also necessarily be somewhat special in character, that is, dry and porous. Under such conditions, the migration of oil, obeying the law of gravity, would be toward the center of the earth, and the migration of gas, because of its extreme lightness, if for no other reason, would be chiefly in the opposite direction.

Because of the fact that dry, open strata, in which petroleums were originally contained, are probably not widely extensive throughout the earth, it may be assumed with a considerable degree of certainty, that gravitation operating separately has not been very

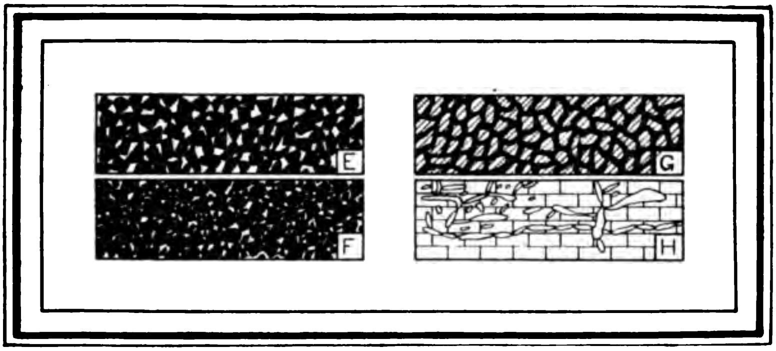
important as a factor in the movement of petroleum and natural gas. The second of the forces tending to produce migration, capillary attraction, is considered to have been and to be much greater than the power of gravity. Many small experiments could be cited to substantiate



DIAGRAMMATIC SECTION OF A TERRACE STRUCTURE
Insufficient water and low porosity are assumed.

this statement. However, capillary attraction, like gravity, will operate only, to any marked extent, in rocks of a special lithologic character, that is, such rocks as have a low degree of porosity expressed thru a large number of minute pores and interspaces and such rocks as are essentially dry. Since, however, capillary attraction is somewhat nullified by the presence of water, we again find that the amount of petroleums and natural gases which has been moved by this force, acting separately, is, probably, relatively rather small.

The last named of the principal forces influencing the migration of petroleum and natural gas—the difference of specific gravity of gas, oil and water—is perhaps the greatest, most widespread and most universally important factor operating in this connection. This is read-



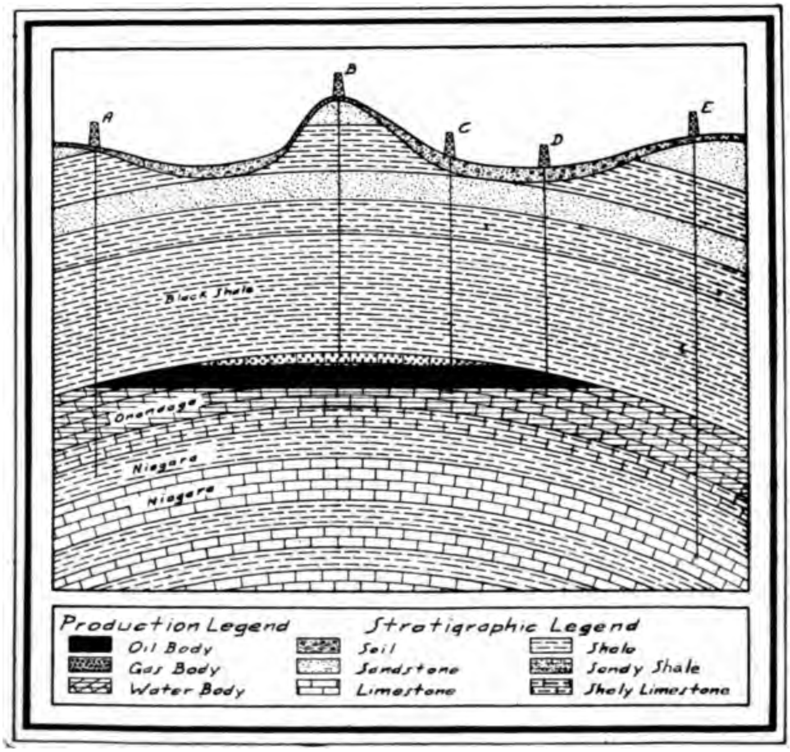
DIAGRAMS ILLUSTRATING ACTUAL POROSITY.

E—Maximum pore space, large sand grains; F—Maximum pore space, small sand grains; G—Lack of pore space in sandstone with tightly cemented sand grains; H—Reproduction of actual conditions of small interlocking cavities in the Onondaga (Corniferous) limestone as found in the Estill-Lee-Powell-Wolfe, and the Allen-Barren-Warren Fields. This last kind of porosity may be due to either solution or dolomitization or both.

ily understood to be the case, because it is now known thru a great volume of experimental drilling information that the dry rock of high or low porosity is the very special rather than the general case. Since most strata containing petroleum and natural gas are water-filled, in part at least, we now come to a consideration of those principles of movement which must base themselves upon the relative specific gravities of the three substances considered, gas, oil and water.

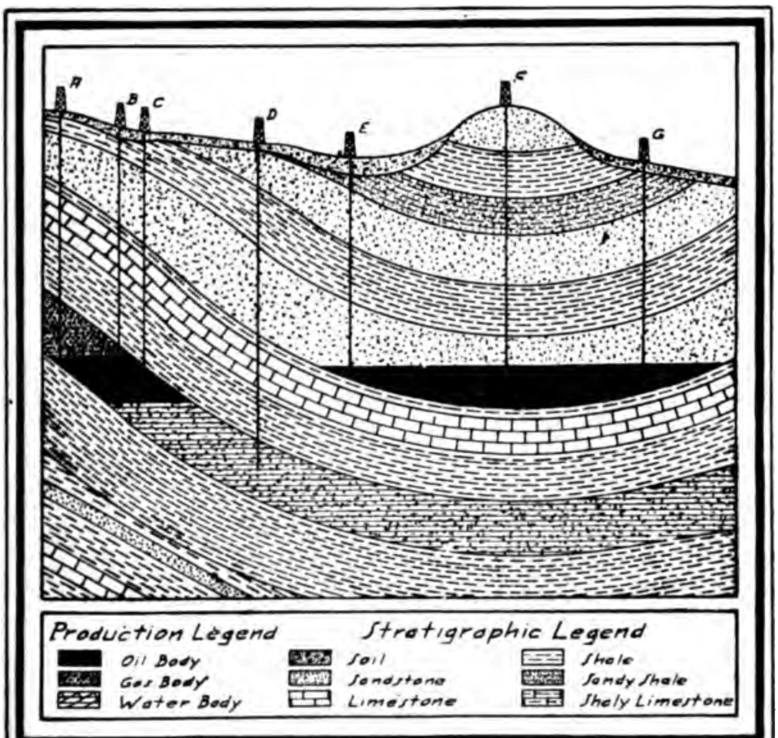
In the most simple condition, that of an undeformed (essentially flat) horizon, the water would be found occupying the lower part of the strata. Resting directly upon the water-saturated portion would be found a layer of oil, and upon this, filling completely the remaining space, the stratum would be the natural gas. Under such conditions, the movement of the oil and gas would be relatively small since it would be within the thickness

of the stratum itself and, were the movement not to proceed any further than this, it is very probable there would be very few accumulations of oil and gas in strictly commercial quantities. It therefore becomes necessary to consider the interpretation of widespread specialized conditions of structure, different from the normal and original, and such structures will of course be the folds in the rock series. Along the belts of such folds, then, the movement will at once be seen to have been greatly increased, that is, the tendency will have been for the entire water content to arrange itself in the lowest position of the structure of any of the porous formations. This would, of course, be the lowest part of the fold. In moving down to this location, the waters must necessarily compete with the oil and gas indigenous at each



DIAGRAMMATIC SECTION OF DOME OR ANTICLINAL STRUCTURE
Adequate water and high porosity are assumed.

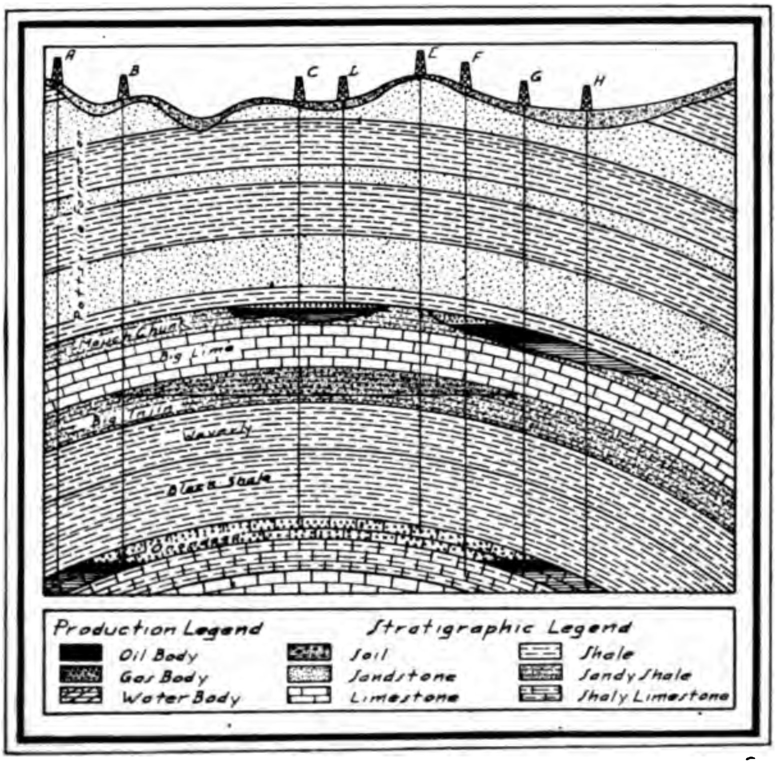
and every point of contact, and should therefore be considered generally successful in displacing them and moving them to higher locations on the folded structure. The position of the water and the oil and gas would then be entirely dependent upon the particular quantities of oil and gas and water contained in the folded strata. With the water conditions prolific, the oil might be expected to be found relatively high on the structure, if not at the very highest place, and the gas above it confined into a very small space and under very great pressure. Were there to be but a small amount of water in the strata, we might expect to find the oil belt lying much further down on the fold, again at the top of the water, and the interven-



DIAGRAMMATIC SECTION OF A SYNCLINAL STRUCTURE

The upper sands are assumed to be essentially without water, the lower ones partly saturated. Equivalent degrees of porosity obtain.

ing space, relatively great perhaps, tending to become entirely filled with gas under a rather high regular pressure. In case of a practical absence of water in the oil production horizon, the oil belt would be—theoretically at least—at the lowest point of the structure or in the syncline proper. Gas under relatively little pressure would be found at all higher points. To such a sequence of conditions there may be added the special conditions of channel deposits such as are widespread in Kentucky. These deposits filling the winding courses of old semi-marine or other currents are generally of an elongated and rather narrow configuration. In this State one of the best examples of this sort of deposit is found at the line of unconformity of the Mauch Chunk and the overlying



DIAGRAMMATIC SECTION IN EASTERN KENTUCKY

The structure is anticlinal and symmetrical, but the location of the oil, gas, and water is different in the Mauch Chunk and Onondaga.

Pottsville. At this stratigraphic level the irregularity is very great especially in the eastern and western Kentucky coal fields.

Sand deposits are generally found filling old channels in shales and limes, and when these deposits are slightly tilted, as they almost invariably are, it will be seen that the extension of the "pay" sand thereby developed will be one that must necessarily be irregular beyond description. This character of oil and gas sand is the one most difficult for geologists and oil operators to interpret. It produces what is commonly designated as a "Stray" and when production is definitely sought in such a horizon an extreme amount of hazard is introduced into prospecting. Many times definite channel deposits are referred to as lenses because of the lack of knowledge of their true character. There is no way that a channel deposit "pay" sand can be worked out accurately by using surface geology.

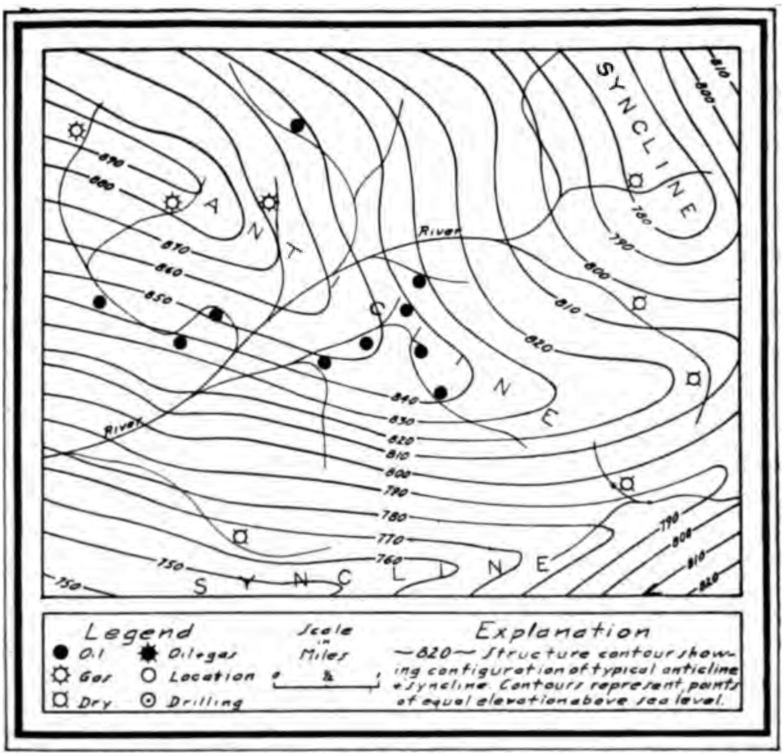
In Kentucky the principal oil producing horizon to date has been the Onondaga or Corniferous limestone, which in many places is quite porous and thereby different from most limestones under cover. Since the "pay" horizon is a limestone, special conditions are introduced respecting accumulation that do not obtain in the typical silicious "pay" sand. The oil and gas that occur in the Onondaga limestone may not be regarded as entirely indigenous to this formation. It is practically a certainty that a great deal of it comes from other and lower horizons. These are in Silurian and possibly the uppermost Ordovician. The black shale of the Devonian, which overlies the Onondaga limestone, must be excluded as the indigenous source of the principal part of the oil found in the Onondaga limestone for many reasons, good reasons which have already been advanced.* Minor faulting, fissuring, and jointing are a number of the factors in the Devonian and underlying limestones that undoubtedly have contributed, without surface indication, to the location of many of the most important oil pools in the Onondaga limestone of Kentucky.

*Jillson, W. R., The new Oil and Gas Pools of Allen County. Dept. Geol. and Forestry, Series V, Vol. I, No. 2, July, 1919.

CHAPTER IV.

THE COMMERCIAL PRODUCTION OF OIL AND GAS.

Contrary to a somewhat widespread opinion, the business of oil and gas production in its modern development is a highly complicated industry. There are many features, small apparently in themselves, which make for success or failure in every oil venture. Realizing the importance of detail, all of the large producing companies in the United States are thoroughly organized for the specific purpose of carrying out this kind of field and office work. In the smaller producing oil companies where leased property has to be examined or de-



Geologic Structural Map—Productive Anticline and Non-Productive Syncline.

veloped, it frequently becomes the duty of one "all around field man" to check up and take care of the many details of the operation.

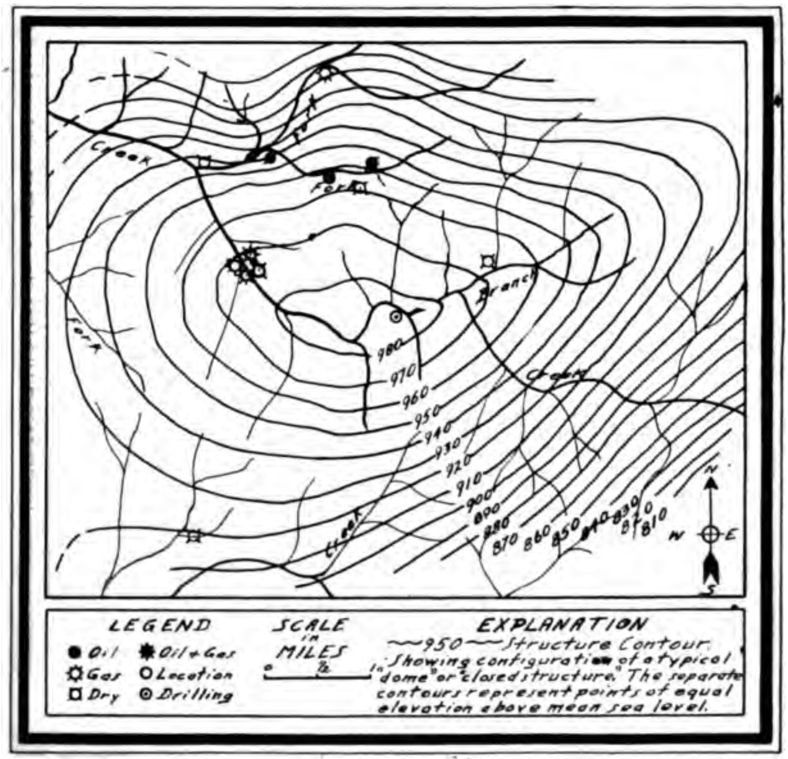
It is now generally recognized throughout the United States, that the safest way to open up a new oil pool is to secure a favorable structure map by a reputable geologist on undeveloped territory. However, in Kentucky, this is not always possible, due to the fact that large portions of the state cannot be mapped accurately in advance of the drill. In this state, therefore, the procedure is generally to first acquire leases and then to work out the geologic structure if possible. In any event no property should ever be started on its developmental

A PROSPECTING DRILLING.

Isolated rig and tank in the Ross Creek, Estill County, field "feeling out" new production areas. Photo by R. L. McClure, March, 1919.

career until an oil and gas geologist of reputation has made a report on it.

When the most favorable locations on any property or group of properties have been determined, contracts are let and drilling rigs are brought in for the purpose of prospecting. Initial wells may be producers or may be dry. When production is secured arrangement must be made at once to store or to dispose of the oil, since the proved production of any property, though it increases the value of the same, does not become of useful economic value, until it is placed upon the market. In Kentucky, gas wells when located close to a trunk pipe line, are considered an asset, but when not located near a trunk line, are considered a liability. Any oil well, whereever located, producing five or more barrels a day from a "pay" sand not over 500 feet deep, is considered a dis-



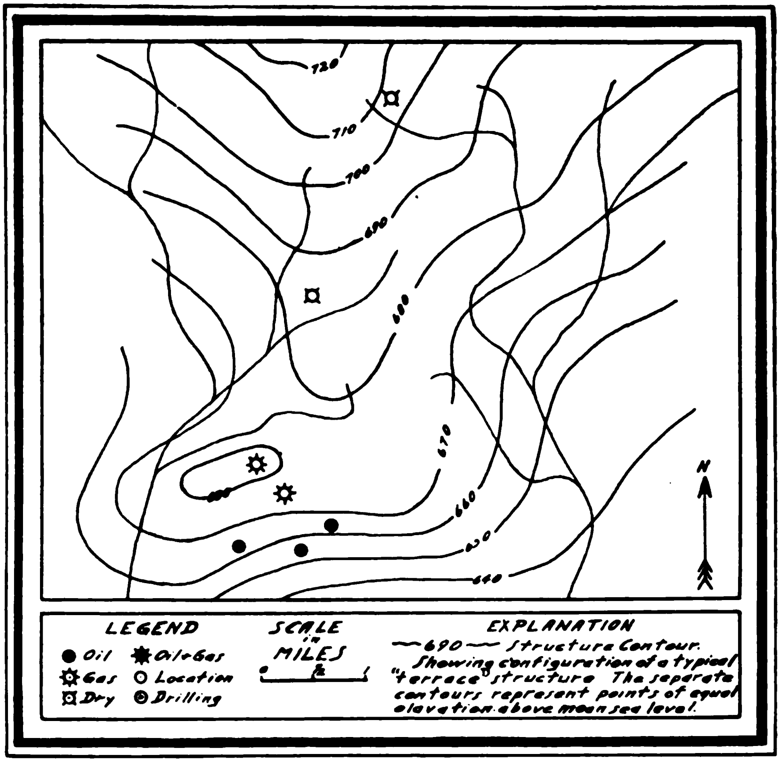
Geologic Structural Map—A Closed Anticline or Dome.

tinct asset. Generally speaking, deeper "pay" sands require corresponding increased production to be commercially important.

In the event he strikes oil or gas on any property, the first thing generally done by the operator is to buy all the available leases close to his production. If he has a geological map of the structure on which he has drilled, he will attempt to follow the oil horizon on that structure. In most cases following the oil strike, there is a wild scramble for all the available adjacent property.

It is in rushes of this kind that many inexperienced would-be oil operators purchase property which can never be made to produce. Such properties are quickly evaluated at many times their real worth and become an important factor of exchange among lease manipulators. Eventually these undesirable properties, though relatively close to the new production, must spell failure. While it is true that many important producing pools in Kentucky as well as in other parts of this country have been located solely by the aid of geologists, it is no discredit to the men of that profession to say that some of the most important pools in this country have been located entirely by "wild cat" and unscientific drilling. It should, however, be noted as a fact of some importance, that at the present time, there are no large producing oil companies in the United States, engaged in the development of unproved territory that are not operating upon geological advice. The simple reason for this remarkable state of affairs is, that while the oil and gas geologist can not positively say that oil and gas underlie any individual property, he can nevertheless (1) keep his clients from drilling a large number of worthless dry holes, (2) save them large expense on the drilling, which they do undertake, and (3) increase their chances of ultimate success.

In Kentucky, there are no uniform rules in the matter of lease writing. Many forms of leases have been used, and the practice common in one locality, generally does not hold for another. The leases are, however, generally for a term of from five to ten years, with rentals, per acre, per year, from ten cents to one dollar. In any undeveloped territory, the first rentals are paid in



Geologic Structural Map—A Terrace

advance. The leasing contract is always a private transaction. In developed territory a bonus is generally paid the land owner in addition to the rentals. This bonus may be from one to fifty dollars per acre, and depends entirely upon the known or the estimated value of the neighboring production. A common and good form of oil and gas lease is given in the appendix of this volume. With it are attached forms, (1) for the deeding of oil and gas, (2) agreement for the sale of all mineral rights, and (3) the general form of a separate oil and gas assignment of lease.

MANAGEMENT OF PROPERTIES.

The management of oil properties in Kentucky varies according to the special conditions, found in the particular field of operation. The problems involved are: (1) The method of most practical and efficient re-

covery of the oil and gas. (2) The certain decline from the initial (flush) production. (3) The method of marketing the oil and gas produced.

In Kentucky most of the oil is secured by the pumping of the well. To the pump jacks, steel lines are connected with a central pumping house to provide the power necessary. A few wells in this State during their early life history fall into the class which is known as "flowing wells." These wells bring their oil to the surface without any mechanical assistance. Most flowing wells later, in their life history, go on the pump because of the decline in the gas and water pressures, which are natural forces that force the oil to the surface. In placing the well on the pump, in some cases in eastern Kentucky where the standard wooden built derricks were

PORTABLE OIL DRILLING RIG.

This is a Sparta No. 30, a very improved and up-to-date tractor drilling machine. Other portable rigs, are the Parkersburg, Star, Armstrong, Keystone, Clipper and National machines.

used for drilling purposes, the derrick is allowed to stand over the well, and the well is pumped on the beam of the drilling rig. On the western rim of the eastern Kentucky oil field, and in the south-central portion of Kentucky where portable rigs such as the National, Parkersburg, Keystone, Sparta, Clipper, Armstrong and Star are used, the drilling outfit is moved away at once and the separate pump jack is installed.

AMOUNT OF PRODUCTION AND DECLINE OF WELLS

One of the most important problems concerning the operation of any oil property is the estimation of its commercial life. It is impossible to determine with any degree of accuracy the life of any individual oil well. It is not impossible, however, to figure the history of a certain group of wells, providing figures of known production to determine the life of same group of wells are available. At the same time, it is possible to estimate the amount of production which will eventually be taken from a group of wells, but it is not possible, in any case with any amount of detailed figures, to determine exactly the amount of oil which may be under any property.

In determining the life of a property the known production data are plotted in the form of a curve. Such curves always show minor irregularities due to the special field conditions or interrupted production. A small curve redrawn over such an irregular line is the one which is finally adopted. The top production of any field is never reached so long as the new and old production combined show an ascending curve. When the new production developed in a field does not balance the decline in the old production, the total production of that field begins to show a loss. Sometimes the condition is only temporary. When it is continued indefinitely, however, then that field from the time of its highest production may be said to be on the decline. The decline in any field is due to three causes. (1) Actual reduced amount of oil available. (2) Reduction of gas pressure. (3) Flooding of the outlying portions of the pool by salt and fresh water.

MARKETING KENTUCKY OIL AND GAS

As soon as oil has been brought to the surface, it is necessary to store it in tanks if pipe line accommodations are not available. If pipe line connections are immediately available with refineries, tank car or river barge transportation companies, these must be estab-

DEVELOPMENT ON ROSS CREEK.
View on the J. F. Harris farm, three and one-half miles from Evelyn. Producing property of Mason & Dixon Oil Company. Photo by R. L. McClure, March, 1919.

lished. Storage tanks are generally of the two-hundred and-fifty-barrel wooden type or the five-hundred-barrel steel type. There are, in Kentucky, no real large tanks except at the refineries at Louisville. The largest steel tank used in the mid-continent field has a capacity of fifty-five thousand barrels. There are, however, many twenty thousand barrel tanks and ten thousand barrel tanks are common. Recently, new designs of concrete tanks have been placed on the market by a large contracting concern. These are being used with success in a number of places in the mid-continent and Texas fields, due to high price of the steel tanks which frequently cost from ten to forty thousand dollars apiece.

In Kentucky the oil and gas pipe lines may be divided into two classes. The principal oil transportation pipe line is that operated by Cumberland Pipe Line Company which serves the Wayne County and Beaver Creek field in the southern and eastern parts of the State, and the Estill, Lee, Powell, Wolfe, and Morgan fields in the central-eastern section. The oil in Allen and Warren Counties is served by the Indian Pipe Line, the American Pipe Line and the Smith's Grove Pipe Line. The gas production of Kentucky is served by two companies, that of the Louisville Gas & Electric Company and that of the Central Kentucky Natural Gas Company. Both of these lines extend from Inez in Martin County to Central Kentucky, the Louisville Gas and Electric Company line crossing this section of the state and terminating at Louisville, Kentucky. Recently, preparations have been made to connect the Beaver Creek gas field in Floyd County with the Louisville Gas & Electric Company's pipe line north of Paintsville. This line will be extended by the Pendegrade Oil and Gas Company. Within general limitations, it may be said that the gas pipe line connections in Kentucky are thoroughly inadequate, because there is a very large amount of unmeasured index gas scattered throughout the eastern Kentucky coal fields. The future promises the probable commercialization of all the gas which Kentucky can produce. A very small portion of the natural gas now available is, at present, being used for casing head gas, gasoline and carbon black production.

CHAPTER V.

STRATIGRAPHY AND EVALUATION OF KENTUCKY OIL AND GAS SANDS

The Ordovician System

The Calciferous Group

In Kentucky, the lowest sediments, stratigraphically, about which anything is definitely known, are those which have been referred in a group to the "Calciferous."* Their basal position in the column establishes them as the oldest rocks in the State and, for this reason, they command more than passing attention. Unexposed in outcrop at any point within the boundary of Kentucky, all information concerning them is based upon the examinations of a number of drillings made at various points in or close to the central Blue Grass Section. Further studies which are now being made by the author of the log samples of the deep well drilling south of Nicholasville in Jessamine County nearly on the apex of the Lexington dome of the Cincinnati arch, point to the conclusion that here may exist under the broad title of "Calciferous" the greater part, or perhaps the complete correlatives, of the Fort Cassion and Beekmantown epochs of the Canadian. Following the completion of this deep drilling at Nicholasville, such determinations as are made will be presented in a separate paper. The position and development of the "Calciferous" sediments as now known are as follows:

System	Series	Sand	Lithology in Order	Thickness in Feet
Lower Ordovician	Canadian	"Calciferous"	Hard sandstone Sandy limestone	700—1000?

*All names of rock formations accepted and commonly used as drilling terms will be quoted in this chapter to aid the reader in learning the Kentucky oil sands.

The uppermost "Calciferous" strata directly underlie the well known "Trenton" group. They are generally found to be white, fine grained, somewhat porous, siliceous, mangnesian limestones. Certain phases of the limestone in this column are strongly oolitic. Frequently, the main calcareous body is capped by very hard, compact sandstone. The lithology, as determined by comparison of a number of well logs, is strikingly similar. The sandy condition of the true "Calciferous" has caused it to be a remarkable source of salt water and the mineral water from a number of the deeper Kentucky wells has been referred to a source in this formation.

The evidence presented by the unsuccessful drilling of the "Calciferous" at Frankfort, Louisville, and Nicholasville is decidedly opposed to a consideration of this formation or group of formations in central Kentucky as a probable producer of commercially important oil. In a well that was drilled into the "Calciferous" some years ago near Elizabethtown in Hardin County, some gas was secured. Again in the eastern part of the State, on White Oak Creek in Estill County, two old drillings struck showing; one, oil and one, gas. The very small quantity, in all three of these wells, combined with the great depth—2,300 feet in the Estill wells—has caused farther prospecting of this sand to be attempted only very occasionally. Older sands than the "Calciferous" have produced in the Appalachian Field. That the "Calciferous" formation (or formations) contain a small amount of isolated oil or gas has been proved, but that it will ever be commercially important as a producer of oil or gas in central Kentucky must be very sincerely doubted.

THE TRENTON

In the drilling vernacular, the term, "Trenton Sand," famous for its production of oil and gas in Ohio, is expanded in Kentucky somewhat beyond its real stratigraphic limits. Properly, the "Trenton" is a series of gray, granular, and sometimes crystalline limestones of about 270 feet in thickness, that lie at the top of the middle division of the Ordovician. They have their typical exposure about the city of Lexington and have for this reason been called the Lexington limestones.

The areal distribution of these rocks is small in the Blue Grass. Following the dip on the Cincinnati anticline they go under cover, and from an elevation of about 1,000 feet above sea level at Lexington, they drop to about 2,500 feet below the surface at Owensboro; 3,500 feet near Ironton, Ohio, and more than 4,500 feet below the surface at Wheelright in Floyd County, Kentucky.

System	Series	Sand	Lithology in Order	Thickness in Feet
Middle Ordovician	Champlainian	"Upper Trenton" "Lexington"	Gray Granular to Crystalline Limestone.	270
		"Lower Trenton" "High Bridge"	Thick bedded and compact Limestone.	600 +

Below the "Trenton" proper or "Lexington" limestone, there is a long series of thick bedded, compact limestones, which is called the "High Bridge." These rocks are the lowest ones stratigraphically that are exposed in the State of Kentucky. They may be

KENTUCKY RIVER TRENTON LIMESTONES.

View about one mile above Cummins Ferry, looking down stream. Photo by W. R. Jillson, April 12, 1919.

seen to good advantage in the Brooklyn (High) Bridge section of the Kentucky river gorge in Woodford and Mercer Counties. They continue vertically at this point below drainage about 200 feet to the "Calciferous" upon which they rest unconformably.

Taking it as a whole, the "Trenton" must be regarded as one of the commercially important oil and gas producing horizons in Kentucky. It is, in fact, one of the very earliest horizons to have shown production in this State. Since 1829, the time the "Burkesville Well" in Cumberland County was drilled, many thousands of barrels of oil have been produced from the various "Trenton" sands. However, though much may be said in favor of the "Trenton" in Kentucky, it must always be remembered that its total production to date, even through nearly a century of exploitation, does not begin to compare in volume with that of some of the higher and comparatively recently discovered "pay sands." Moreover, the "Trenton" has always been prospected with a great deal of hazard, and, generally, it may be said that, outside of a few favored and somewhat restricted localities in southern Kentucky, it has been found barren of either oil or gas in commercial quantities.

Wayne and McCreary Counties contain practically the entire productive area of the "Trenton." The so-called "Deep Sand" of Wayne County is probably within the Knox dolomite, the lowermost of the "Trenton" group. Various pay sands of lesser depths than the "Deep Sands" found in Barren, Wayne, Clinton, McCreary and Cumberland Counties, belong in what is known as the "High Bridge" or "Lower Trenton." In the shallower sands in these same counties, the principal pay has been found in what is styled the "Lower Sunnybrook." This sand has come to be regarded as the only definite oil pay in this limestone horizon, the other pays coming at very irregular depths of from 250 to 850 feet below the surface in these southern counties. Because of the great irregularity of these lower sands,

little dependence can be placed in them, and it is certain that they cannot be regarded as important producers of crude oil in Kentucky.

THE CINCINNATIAN

Directly above the "Trenton" group and just below the base of the upper Silurian, where it is present, and the "Black Shale," where the Silurian is absent, lies a rather thick series of limestones, bastard limes, blue shales, and some thin calcareous sandstones. These were called by the older geologists the Hudson group. South of the Kentucky line in Tennessee they are known as the Nashville group. These rocks, which form the outer Blue Grass section of this State, find their strongest and most typical development here. In this portion of Kentucky they reach an aggregate thickness of about 700 feet and have been stratigraphically divided into three stages which are in ascending order, the Eden, the Maysville and the Richmond.

System	Series	Sand	Lithology in Order	Thickness in Feet
Upper Ordovician	Cincinnatian	"Caney" "Upper Sunnybrook" Barren County "Deep" Cumberland "Shallow"	Limestone Blue Shales Sandstone	450—700+or-

South of the central Blue Grass area, the Cincinnatian again outcrops along the Cumberland River in widening exposure from the southwestern part of Pulaski County to the State line in the southeastern part of Monroe. In this region, however, due to its proximity to the saddle between the Lexington and Nashville domes, only a portion of the full thickness of this group may be seen. In this section of the State the entire group thickness would be about 450 feet, due to the absence of the upper members. Because of the difficulty

with which the base of the Cincinnatian and the top of the Trenton is determined under cover, little is known concerning the thickness of this upper Ordovician group at any considerable distance away from the outcrop. It is thought, however, that with a thickness of 450 feet in Cumberland and Clinton Counties, that it will thicken to 550 feet under Wayne, and attain 600 or 650 feet in Whitley County. In Russell and Pulaski, 500 to 550 feet is the average. West and southwest of Cumberland County very little success has attended efforts to delimit the Cincinnatian, but estimates of from 600 to 700 feet have been made. Due to the rapid dip to the northwest, this group of rocks attains great depths in western Warren and Logan Counties, and is therefore unimportant from a prospecting standpoint.

OLD LAGRANGE GAS WELL.

This well which is located on a farm one mile southeast of Lagrange, Oldham County, and on the headwaters of Floyd's Creek, was drilled in by Lagrange capital about twenty years ago. Never a large producer, local reports state that it early became exhausted. It is located on a small anticlinal fold. Of three other old gassers one is still producing. Photo by W. R. Jillson, April 13, 1919.

As an oil and gas producing horizon, the Cincinnatian has just claims to recognition. It contains the "Caney" Sand of Wolfe and Morgan Counties. The "Upper Sunnybrook" of Wayne also belongs in this series. Various shallow Blue Grass wells have found small production in this group. Examples of these are the Oldham County gas wells near Lagrange, and the Bourbon County oil wells near Middleton. In Barren County and in Clinton County production was secured by some old wells in a sand 300 to 400 feet below the "Black Shale." At such a depth this sand may well be included within the Cincinnatian. The principal area of productivity of this group of rocks has been outlined in the southern central part of the State, and it is not thought likely that any pools of importance will ever be located at any great distance from this section.

THE SILURIAN SYSTEM

The Clinton Formation

The lowermost formation in the Silurian System, as now understood in Kentucky, is the "Clinton" sandy magnesian limestone. Though well and widely known among oil men by this name, it has been rechristened during the past decade, and is now properly called the Brassfield, after a typical exposure in Madison County. It is a rather thin bed, varying between 10 and 20 feet, the thicker portions being on the eastern side of the Cincinnati arch. In the certain occurrence of the "Clinton" or Brassfield on both sides of the Cincinnati arch, this formation bears an unique distinction in the Silurian Group, for it is the only one of which this is true. Reddish in color, the Clinton generally exhibits the well known "flax seed" iron ore, lithological characteristic, which in many drillings has assisted considerably in its identification. Geographically, the Clinton is an eastern and western Kentucky limestone. It does not occur in the central Blue Grass, having never been deposited in this section, which was probably a land area during the Clinton time.

Throughout Kentucky where it has been identified definitely, the "Clinton" is found to be petroliferous, but it cannot be said that a single instance of important commercial quantities of oil or gas can be referred to it in this State. In western Kentucky it is recognized in wells as a light blue limestone. In the eastern province it is a darker sandy limetone if it does not show the more typical reddish color and the "flax seed" characteristic. Following the uniformity of dip on either side of the arch, the "Clinton" or Brassfield drops off rather quickly both to east and the west, and it is only reached at those points, which are somewhat removed from the rim, by rather deep drilling. The position of the "Clinton" is shown in a table in a discussion of the Niagaran, since it is now considered the lowermost member of this group.

The Niagaran

Although the term "Niagaran" has been recently expanded by stratigraphers to include the underlying "Clinton" or Brassfield, in the opinion of most oil producers it goes down only to this last named limestone formation. Good reason for this separation by oil drillers is found in the apparent isolation from a producing standpoint of the two divisions. Recognizing the importance here of such considerations, the "Niagaran" and "Clinton" are presented separately, though their section is given in combination.

System	Series	Sand	Lithology in Order	Thickness in Feet
Middle Silurian	Niagaran	"Niagaran"	Alternating limestone, shales, and sandy limestones.	50—250 E. of Arch 50—200 W. of Arch
		"Clinton"	Light to dark, blue to blue to redlish, sandy limestone.	5—20

The "Niagaran" proper, in Kentucky, consists of a series of alternating thick shales and then sandy limestones lying above the "Clinton" if this is excluded, or the uppermost Cincinnatian—Ordovician—if the "Clinton" is taken into the group. Directly above the "Niagaran" is found the "Onondaga" ("Corniferous")

limestone of the Devonian. Always an irregular group of sediments in total thickness, it may be said that drilling has determined its greatest thickness in Estill, Powell, Menifee, Mason, Lewis, Rowan, Fleming, Bath and Madison, and parts of adjoining counties. Farther east, west, and south the section thins perceptibly. Its greatest thickness is probably not much over 250 feet in only a few wells or localities. In the vicinity of Louisville, the uppermost "Niagaran" is what is known as the Louisville limestone. It has here a thickness of about 100 feet and is underlaid by the Waldron shale of about 15 to 20 feet in thickness. Below these lie in order the Laurel limestone and the Osgood shale with a total thickness varying from 75 to 150 feet. Proceeding south from Louisville, and under cover, some of these members of the "Niagaran" drop out and others thin considerably, giving a much reduced section in the southern part of the State.

It is only recently—within the last three years—that the importance of the "Niagaran" group of shales and limestones has come to be appreciated from an oil and gas standpoint. Development, and with it a study of the logs produced, has now placed the "Niagaran" System second perhaps only to the "Onondaga" ("Corniferous") limetone as a prolific producer of high commercial oil. The recent development of the Estill, Powell and Lee County fields—though the production here was secured mainly from the "Onondaga"—offered the suggestion that the "Niagaran" group directly underlying was very possibly making some considerable contribution to the accumulation. But it was found with the extension of the work in Allen and Barren Counties and a part of Warren County, that the role of the "Niagaran" became important. Here, occurring as a sandy limestone with a high degree of porosity, it holds a position of equal rank with the "Onondaga" ("Corniferous") and by some producers is considered superior. Its total thickness in Allen County has not been definitely determined, but this as well as the areal distribution of its productivity will be established during the present field season.

THE DEVONIAN SYSTEM

The Onondaga (Corniferous) Limestone

As the principal oil producing horizon in Kentucky, the "Onondaga" or "Corniferous" limestone commands first attention among all of the productive formations in the State. Coupled with the overlying Hamilton, found only on the western flank of the Cincinnati arch, it has been definitely classed as of middle Devonian time. East of the Cincinnati anticline the "Onondaga" occurs alone. and here it attains a thickness varying from 25 to 45 feet.

EXPOSURE OF ALLEN-BARREN "OIL SANDS."

The upper ledge is the Onondaga "Corniferous." The lower ledge, the upper portion of which protrudes above the water, is the Niagaran. The view is at the mouth of Glover's Creek on the Barren River, Barren County, Ky. Photo by W. R. Jillson, July 16, 1919.

It rests unconformably upon the middle Silurian or "Niagaran." The slight similarity of drilling samples of these two limestone formations, though separated by a distinct shale, has led to a great deal of confusion, especially on the part of drillers unaccustomed to the sequence, as to the exact limitations of either limestone formation under cover.

System	Series	Sand	Lithology in Order	Thickness in Feet
Middle Devonian	Hamilton	"Corniferous" or "Irvine" or "Ragland," etc.	Cement limestone W. Ky. only	0–24
	Onondaga		Cherty magnesian limestone with porous strata.	0–45

The "Onondaga" or "Corniferous" bed—the "Irvine" and "Ragland" sands as it is more popularly known among the drillers—is a thick bedded, massive, magnesian limestone. At the outcrop it is generally characterized by an abundance of cherty inclusions. These produce, as a result of unequal weathering, an irregular surface giving the "Onondaga" limestone the hornstone name. A widely distributed characteristic of this formation, especially under cover and at short distances from the outcrop, is its tendency to develop a considerable degree of minute porosity, due to solution and dolomitization. Examples of this may be seen in widely separated portions of the State. The writer has remarked the occurrence in Lewis, Estill and Allen Counties and it is to be seen at many intervening points. This porous tendency is the chief factor of importance from an oil prospecting standpoint, for only in those localities where the limestone is porous to a considerable degree at least, is there any possibility of recovering oil in commercial quantities.

A comparison of well records and typical exposures demonstrates that directly underlying the "Black Shale" occur three to five feet of dark brown, hard, bituminous and sometimes sandy limestone ledges, alternating with thin, dun colored, calcareous shales. This phase is the so-called "cap rock" so well known to the driller. A hornstone of a gray color and of somewhat massive character follows, which is in turn underlaid by a number of strata of gray colored flintless magnesian limestones. The base of the "Onondaga" is a white or light limestone. One of the remarkable facts in connection with the occurrence of the petroliferous strata or pockets in the "Onondaga" is that they may occur well towards the top of the formation in the hard, flinty phase, or again fairly well towards the base in the pure limestone. Frequently the oil "pay" is found at both horizons.

WHERE THE "CORNIFEROUS" PINCHES DOWN.

The Devonian-Silurian contact is where the handkerchief is held by the two lower men. The Black Shale—Onondaga (Corniferous) contact is at the left hand of the upper man. At this point, ¾ mile below Glover's Creek on Barren River, Barren County, Ky., the Onondaga is only 7 feet thick. Photo by W. R. Jillson, July 16, 1919.

The result of increased drillings has been to extend the known sub-surface occurrence of the "Onondaga" limestone. In a broad way it may be said to underlie the whole eastern coal field with the exception, perhaps, of the very southeastern counties where deep drilling

has not been carried out, and where information is lacking. Passing west and southwest in an arc, it is found under Allen, Simpson and Warren Counties, and then extending north in a broadening V to the Ohio River, where at Louisville it forms with the overlying Hamilton the falls of that river. Incidentally it may be recalled in passing, that it is to the river bed outcrop at this point of the "Onondaga" limestone and the falls which it forms, that Louisville owes its birth and present industrial position.

Though so widely distributed and so productive in certain localized sections, it cannot be said that the "Onondaga" is by any means a state wide producer. In eastern Kentucky in Lawrence, Magoffin, Johnson and Floyd, it has been identified at increasing depths both south and east. In every case it has been found to be quite tight and thoroughly unsatisfactory, with only faint shows of oil or gas. Possibly the small number of wells, as compared to the widespread acreage referred to, makes any conclusions with respect to the corniferous in this section somewhat premature. However, evidence seems to point to the fact that in this or any other part of Kentucky where the over burden is thick and heavy, or where the structural location of the "Onondaga" is essentially geosynclinal, this well known horizon does not have much to offer to the oil and gas prospectors. As the greatest oil producing horizon in the state, however, it will continue to be of great interest, and will be "wild-catted" in many forlorn and out of the way places by hopeful prospectors. The net result of this faithful exploration will result without doubt in the discovery of a number of new oil and gas pools of varying importance. To date, the following, the chief pools in Kentucky, derive their production from the "Onondaga" or "Corniferous" limestone either in part or in whole. (1) Ragland, oil; (2) Menifee, gas; (3) Irvine, oil and gas; (4) Campton, oil; (5) Cannel City, oil and gas; (6) Big Sinking, oil; (7) Ashley, oil; (8) Ross Creek, oil; (9) Station Camp, oil; (10) Miller's Creek, oil; (11) Buck Creek, oil; (12) northwestern Allen County pools, oil and gas; (13) some Barren County pools, oil and gas; (14) some Warren County pools, oil and gas; (15) various other small and, as yet, unimportant oil and gas pools.

The Black Shale

Resting unconformably on the "Onondaga" or "Corniferous" limestone, for which it serves as the principal protection, the "Black Shale" of upper Devonian time is the most pronounced, widely distributed, and best known drilling horizon in Kentucky. It has as equivalents, in part or in whole, the "Ohio Black Shale," the "Chattanooga" shale of Tennessee, and the "Genesee" shale of New York. In some places in Kentucky, principally from the vicinity of Morehead southward in a belt underlying the western edge of the eastern coal field, the superimposed Bedford and "Berea" formations of the lower Mississippian pinch out and drop the black or

THE DEVONIAN LIMESTONE AND SHALE.
This view shows the Onondaga (Corniferous) Limestone and the Black Shale, above it. In cut on Winchester-Irvine branch of L. & N. R. R. Photo by W. R. Jillson.

brown Sunbury shale of the same system down on to the Devonian "Black Shale." As it progresses to the south, the Sunbury thickens, and lying immediately above the "Black Shale" with no definite line of demarcation, it frequently is included with the "Black Shale" in the logs of drillers. While the error is widespread, it is unintentional and, for the most part from a drilling or production standpoint at least, makes no difference. In this

discussion all references to the "Black Shale" are directed to that portion only which is upper Devonian. Due to the above causes, however, it is quite impossible to eliminate a small element of error. In stratigraphic section the black shale appears as follows:

System	Series	Sand	Lithology in Order	Thickness in Feet
Upper Devonian	Black Shale	"Strays"	Black, fissile Bituminous Fine shale	75—Southeast 240—Northeast —Southwest

The prospecting drill has pierced the "Black Shale" in nearly every part of the state except the central Blue Grass and the Jackson Purchase. In the Blue Grass section it can never be found since the leveling agencies of erosion have removed it. In the Purchase it is much too deep to be of interest. In all other places it has been found to have a very uniform, lithologic character, rather soft under the bit and always easily recogniza-

AN ANTICLINE BUT NOT AN OIL STRUCTURE.

The view shows a small anticlinal buckling and slight faulting with perpendicular drag zone in the Black shale on Sulphur Creek, Nelson County, Ky. This structure and many others of its kind possess illustrative values only. It could not possibly have any effect on oil and gas accumulation. Photo by W. R. Jillson, July 14, 1919.

ble. It never fails to show a very oily and gassy character. A considerable number of so called oil seepages have been reported along its outcrop, but none of them are large or of commercial importance. Though always suggestive of oil and gas, the "Black Shale" in Kentucky has but a very few instances of actual occurrence of these hydrocarbons in commercial quantities. Of these exceptions to a widely established rule, there are three that deserve attention. The first and oldest of these is the Meade County gas which comes from a "Stray" sand in the "Black Shale." The second of these is that of a single gas well, in a thin "Stray" sand at a depth of about 2000 feet in the Beaver Creek section of Floyd County. The third instance is that of one or two relatively shallow wells which have penetrated the "Stray" sands in Barren and Allen Counties rather recently.

In all of these instances the production from these "Black Shale" "Strays" has been gassy and not oily. This fact is remarkable. It is especially remarkable when it is taken into consideration that the chief oil horizon of the state, the "Onondaga" limestone, underlies directly the "Black Shale," and that this same shale is frequently found to be overlaid by various oil horizons of high quality, if generally of small quantity. It is a matter of record that many geologists of ability in Kentucky have subscribed their approval to the "Black Shale," as the indigenous source of Kentucky's principal oil production. The reasons for such subscription and accord are difficult to perceive. It may be said plainly that not only does the above remarkable fact serve in the mind of the writer to condemn such unfounded conclusions, but that there are besides this many additional reasons why the "Black Shale"—the most oily, gassy, and barren horizon in Kentucky—is without commercial oil pools of importance.* In some parts of Ohio and Tennessee, as well as in Kentucky, small amounts of low rock pressure gas—indicating plainly the cut off and confined lens character of the "Stray" sand—have been found and used commercially. However, as an important producer of gas the "Black Shale" is quite as much a failure as it

*Jillson, W. R., The New Oil and Gas Pools of Allen County, Dept. of Geol. and Forestry of Kentucky, Mineral and Forest Resources, Series V, Volume I, No. II, pp. 120-143, 1919.

is in the production of oil in commercial quantities. Whatever rare and individual exceptions may be taken to this stand, it cannot be denied that the principal oil and gas hydrocarbons indigenous to the "Black Shale" are still within it, and by virtue of their present chemical condition and widespread distribution protected from recovery by the exploring drill. What percentage of the known petroliferous content of this formation may be recovered through destructive distillation methods remains for the future to disclose. A number of tests run separately on this shale from samples taken at points all around the "horseshoe" of the outcrop in Kentucky show that the "Black Shale" may be expected to produce under ordinarily severe methods from 10 to 25 gallons of tarry or oily substance to the ton. It has been claimed that with better and improved methods as much as 30 gallons can easily be secured. While the practicality of placing such large investments in a venture of this kind, as would be required, is serioulv doubted under present market standards, it may be pointed out that, should these same conditions change, this great petroliferous shale body may offer practically unlimited supplies for a future and higher priced market.

THE MISSISSIPPIAN SYSTEM

The Waverly Series

Outcropping close to the western border of the eastern coal field from Lewis and Greenup Counties southwesterly to the Tennessee-line counties of Allen, Monroe and Cinton, and thence north through Taylor to Bullitt at the Ohio River, are found that group of shales, limestones, and sandstones which have been given the group name of Waverly. As a rule these lower Mississippian sediments are clastic—sandy and shaly—in the northeast. They become more calcareous and less clastic toward the south, and on the swing around again to the north toward Louisville they become somewhat calcareous. In general the thickness of this group is greater in the north and northeast on either side of the Cincinnati arch, and less in the southern part of the State. Greenup

CROSS BEDDING AND NOT OIL STRUCTURE

This is a weathering characteristic developed in the Fort Payne chert of Barren County. The dips at the right are rendered valueless as structural indications by the occurrence of the horizontal beds at the left. Photo by W. R. Jillson, July 17, 1919.

County shows a thickness of about 500 feet, which decreases to about 400 feet in Bath and Fleming. In the southern part of the State it is not more than 300 or 350 feet. The Waverly is divided into four formations stratigraphically, which are, in ascending order, the Kinderhook, the Cuyahoga, the Logan, and the Warsaw. The oil sand relationships are as follows:

System	Series	Sand	Lithology in Order	Thickness in Feet
Lower Mississippian	Waverly	Keener Big Injun Squaw Wier Berea Stray, Mt. Pisgah, Beaver, Otter } Wayne Cooper Slickford Amber oil sand of Barren, Warren and Simpson.	Clastics — sandstones and shales in Eastern Kentucky. Calcareous shales and limestones in Western Kentucky.	500 in N. E. 400—600 in E. 300—350 in S. 200 in S. E. 400 in W.

The areal distribution or outcrop of the Waverly in Kentucky is considerable but this expanse is about doubled by its extent under cover. It underlies the eastern and western coal fields, and probably also the Jackson Purchase but at much greater depths. The Waverly contains a long list of petroliferous sands. Many of these sands are of widespread extent, such as the "Big Injun" group. Some are localized producers only, as the "Wier" and the "Berea," the Wayne County group, or the Barren, Warren and Simpson Counties amber oil horizon. East and west of this outcrop the Waverly, following the normal dip, plunges rapidly under cover, where well records in general easily establish its position and its petroliferous sands.

In the eastern coal field the counties of Lewis, Greenup, Carter, Boyd, Elliott, Lawrence, Johnson, Martin and Floyd are underlaid either in part or in whole by the Berea and Wier sands, which are the lowest widespread producers in the Waverly group. Furthermore, these sands are to be regarded as productive on structure within this area as shown by many tests. In Wayne and adjoining counties, the "Stray," "Mt. Pisgah," "Beaver," "Otter," "Cooper" and "Slickford" sands are productive. The entire southeastern portion of the eastern coal field, from Mt. Vernon in Rockcastle County eastward to Inez and the Tug Fork of the Big Sandy River in Martin County, is underlaid by the "Big Injun" group. This group, to name them in a descending order, consists of the "Keener," "Big Injun" and "Squaw" sands. In this group well records show that one or two of these sands are generally missing. The "Big Injun" group may be regarded as a gas producer of importance in eastern Kentucky, but it is not an oil horizon in the commercial sense of the word though very small high gravity oil production is being secured from it from a well on Toms Creek in Johnson County.

THE ST. GENEVIEVE-ST. LOUIS LIMESTONE

The most persistent and easily recognized shallow-to-medium deep limestone horizon in Kentucky is that which is known as the St. Genevieve-St. Louis group. It is the outstanding calcareous feature of the Missis-

sippian System. Taken together with their occasional thin sand inclusion, these two formations are known as the "Big Lime" by most drillers. They are also less frequently known and correlated with the Newman limestone and the Mountain limestone of adjoining states. The sequence of this limestone group is as follows:

System	Series	Sand	Lithology in Order	Thickness in Feet
Mississippian	St. Genevieve St. Louis	"Big Lime"	Fine sands oolitic white limestone. Tan sand lens. Fine gray white compact limestone.	20—400 E. Ky. 5— 7 E. Ky. 475—1000 W. Ky.

Although generally found in place, the "Big Lime" group, as may be seen from the above figures covering its range of thickness, is variable. It, however, furnishes a very important guide for wildcat drilling where it is under cover, and it is also of considerable use through the definiteness of its lower surface in those sections of the State where it is exposed and forms the surficial rocks. The "Big Lime" group was formerly one which was in much dispute, many drillers mistaking lower Ordovician rocks for it, and consequently attributing to it much lower horizons than it really occupies. However, this error is now one of comparative rarity due to the better understanding of the various sections throughout the State of Kentucky that are now being drilled. Some thicknesses of the "Big Lime," as discovered by the drill, may be of use in further prospecting. In eastern Kentucky under the coal field, the "Big Lime" group is found thinest in Greenup, Boyd and Carter Counties, and thickest to the southeast along the Pine Mountain fault. Near Ashland it is about 60 feet, and in Greenup 40, in Rowan and Menifee between 20 and 60, in Bath and Montgomery between 65 and 100, in Estill and Powell about 150 to 160 feet, in Magoffin and Johnson from 100 to 140, in Floyd from 120 to 200, in Wolfe and Morgan 75 to 110, in Lawrence 150, in Martin and Pike 180 to 240. On the Pine Mountain fault it is about 400 feet thick and at Cumberland Gap about the same.

McCreary County shows in a deep well at Pine Knott 395 feet, and the outcrop in Clinton County has been measured at 303 feet. Going westward in Meade County, it is 475 feet thick, and in Hart 500. Breckinridge shows over 700 feet, and with a regular thickening to the west, 800 and 1,000 feet is what may be expected. From Whitley County westward the underlying Warsaw limestone, about 100 feet thick, is likely to be included in the drill records.

The following record of depths below the surface may be of some service. In Carter County, big lime was struck at about 80 feet, but is exposed in the lowest drainage. The rapid dip to the east puts it 500 feet below the surface in Boyd and 975 feet near Huntington in West Virginia. In the southern part of Lawrence County it is not over 160 feet below the surface, but in the central portion, due to a deep syncline, it is over 1,000 feet. In Wolfe County it is about 420 feet below the surface, and in Morgan County between 360 and 460. Progressing to the south in Magoffin, it is between 700 and 850 feet; in Floyd County, between 1,000 and 1,150. In Martin it is between 1,200 and 1,300 feet, and in Pike County about 1,500 feet. The Pine Knot well in McCreary County shows it at 900 feet below the surface. These depths, as given, are not intended as an abolute rule, but simply as an index to the general location at which the "Big Lime" group may be encountered.

Speaking within reasonable limits, the St. Louis or "Big Lime" group may be considered petroliferous. Along its outcrop, especially in northeastern Kentucky, petroleum may be seen in the cavities of freshly broken fragments. However, the quantity of petroleum in this formation is small at the outcrop and seems to be less under cover, for there is not a record well in eastern Kentucky which produces commercial quantities of oil from this horizon. However, the "Big Lime" is important from a gas standpoint, and it is certain that the gas from this horizon in Floyd and Knott Counties, where it occurs in abundance (as shown by drilled wells) will be commercialized. In Martin County, a small amount of gas from the "Big Lime" has been used and gas has been found in the "Big Lime" in Pike. The gas hor-

izon is the thin tan sand lens which occurs about midway through the limestone group. This lens is not uniformly or widely distributed, nor in all cases present in the "Big Lime," but it is known to exist in Martin, southern Johnson, southern Magoffin, Floyd, Pike, Knott, and parts of Breathitt. How much further it may be extended to the southeast remains for a prospecting drill to tell. At present, the largest gas well in Knott County, on the Bolen farm on Rock Fork of Right Beaver Creek, comes from this horizon. The life of gas obtained from the "Big Lime" sand inclusion is also a matter of speculation. Certainly it is not a thick sand, but on the other hand the limestones surrounding it are very thick both above and below, and also compact.

THE CHESTER OR MAUCH CHUNK GROUP.

This horizon, from an oil and gas standpoint, is one of the most important in eastern Kentucky. In western Kentucky the lithology changes entirely and it also undergoes a great thickening. In eastern Kentucky, the farthermost part, the rocks of the upper Mississippian are red shales, white sands, and thin bastard limestones, underlaid by thin dark shales. This is the Mauch Chunk group, well known in West Virginia and Pennsylvania. Towards the southwestern portion of the eastern coal field, the shales and the sands disappear, or rather are graded over into an increasing amount of calcareous sediments, and as one passes over the Cincinnati arch to the western coal field, the sands and shales become interbedded with persistent limestone of the characteristic Chester.

System	Series	Sand	Lithology in Order		Thickness in Feet
Mississippian	Chester or Mauch Chunk	"Maxon"	Red shale Sandy shale White sand Shale White sand Calcareous Shales Bastard lime	E. Ky.	30 to 275
			Sandstones, limestones and thin shales	W. Ky.	300 to 800

In many ways the thickness of the Mauch Chunk or Chester is similar to that of the underlying "Big Lime" group. In northeastern Kentucky, the Mauch Chunk—Chester is thin, occurring at the outcrop as red and green shales with thin limestones and sands. The thickness continue as it progresses to the south and southwest, and the greatest thickness is attained in western Kentucky. The Mauch Chunk is an extremely variable formation in point of thickness, and may, due to the great unconformity which exists between it and the overlying "Pottsville Conglomerates" of the Pennsylvanian, be entirely cut out. In Floyd and Pike, where it finds its best expression in eastern Kentucky, it has a thickness varying from 130 to 268 feet. In Martin County it varies from 140 to 274. In Knox County it is about 268 feet, and the Pine Knot well in McCreary is 93. In western Kentucky, in Hancock County, it is 597 feet, and in the western part of the State probably reaches 800 feet.

In Eastern Kentucky the Mauch Chunk is now distinctly recognized, as in the adjoining state of Virginia, as a producer of both oil and gas, and most of the production of the old Beaver Creek field in Floyd County may be attributed to this horizon. It has been erroneously thought that the white sand, which was encountered in this section at about 1,000 feet, belonged in the "Pottsville Conglomerate" towards the base of this formation, but it is now definitely known that the Mauch Chunk covers the greater part of southern Johnson, Martin, Floyd and Pike Counties continuously, and that the oil and gas obtained in this section from a white sand intercalated between red to green shales is the "Maxon" sand of the Mauch Chunk, as known and understood in West Virginia. The possibilities of the "Maxon" in eastern Kentucky have not as yet been thoroughly tested, and it is very probable that with farther drilling this sand will be found to produce in other localities besides the Beaver Creek section in Floyd County. From a standpoint of commercialization, the oil and gas obtained from the "Maxon" are second to none in the State. Never a large producer it has, on the other hand, always exhibited the sterling qualities of high grade, green oil, high rock pressure gas, and long lived wells where either

oil or gas was encountered. The "Maxon" may occur as a single or as a double sand, with an intercalated shale or lime. It varies in thickness from 50 to 100 feet. In western Kentucky, the Chester limestones have never been shown to be productive, and for this reason will receive no further discussion.

THE PENNSYLVANIAN SYSTEM

The Pottsville Conglomerates

One of the very earliest horizons to produce both oil and gas in the State of Kentucky was the "Pottsville Conglomerate," a shallow well drilled originally for salt that encountered both of these hydrocarbons in Knox County long before the Civil War. To the present time, the "Pottsville Conglomerate" has remained an important shallow producer of oil and gas, though it may be said that none of the wells drilled in the Pottsville have ever produced in their sum total so much oil as has

CLIFF OF THE POTTSVILLE CONGLOMERATE.
This formation caps the hills in the oil fields, east and south of Irvine and gives the rugged character to the topography. Photo by A. M. Miller, 1917.

been secured from lower stratigraphic horizons. The "Pottsville Conglomerate" is found at the base of the coal measures, and is therefore limited to the eastern and western coal fields. The name "Conglomerate" is perhaps misleading, for the group of sandtones, shales, coals and true conglomerates, which have come to be included under this heading, are not and could not all be conglomerate. Usually the basal portion of the formation is truly conglomerate, containing white quartz water worn pebbles, varying from the size of a pea, in Western Kentucky, to that of a dove's or a hen's egg in southeastern Kentucky. The Pottsville sequence, as found in eastern Kentucky, is as follows:

System	Series	Sand	Lithology in Order	Thickness in Feet
Pennsylvanian	Pottsville Conglomerate	Beaver-Horton Pike in Floyd and Knott. Wages, Jones, Epperson in Knox.	Alternating sands and shales. Coals with strong conglomerate base.	60—1000

Changing thickness and the variable lithology are the two most important characteristics of the Pottsville. In general, the Pottsville thicknesses vary greatly and regularly in northeastern Kentucky to southeastern Kentucky. This is due to two factors—one, that the conglomerate portion of the Pottsville in northeastern Kentucky is the surficial rock and its thickness in many localities is no greater than that which has been left by erosion. This in some cases is as low as 30 to 60 feet. Where it is under cover and protected, its true thickness for that locality is of course obtainable. It does not entirely go under cover until it passes an east-west line, which approximates the northern boundaries of Wolfe, Magoffin, Johnson and Martin Counties. In northeastern Kentucky, this basal group of Pennsylvanian sediments known as the Lee formations consists chiefly of a heavy conglomerate sandstone underlaid by a bed of dark shale, the latter often exhibiting coal. In southeastern Kentucky, where the maximum thickness of the conglomerate is about 1,000 feet, Lee County contains several seams of coal, with at least three strong, massive sandstones separated by beds of shale and sandy shale. Along the western

THE CLIFF FORMING POTTSVILLE.
This is a characteristic view of topography along the western border of the Eastern Coal Field, in the oil district. Photo by W. R. Jillson, 1918.

border of the eastern coal field, the "Pottsville Conglomerate," in its basal formation, forms the striking, rugged feature of the topography, and is seen as massive conglomerate and sandstone cliffs overlying the Chester and Mauch Chunk groups. In southeastern Kentucky, it is the Pottsville conglomerate which caps the Pine Mountain throughout its extent, and has not only given in its present contour, but has really, through its erosion-resisting qualities, preserved the mountain at its present height. In northeastern Kentucky the Pottsville conglomerate, in Green and Carter Counties, varies from 30 to 100 feet, in northern Morgan it is about 150, in Jackson and Menifee 300, in Wolfe 400, in Estill 271, in Morgan 450, in Boyd 500, in Lawrence 250 to 750, in Johnson 600 to 800, in Martin 600 to 1,000, in Floyd 800 to 1,000, in Pike 800 to 1,000.

The "Pottsville Conglomerate" shows three distinct sands, "Beaver," "Horton" and "Pike," all of which are petroliferous. These sands have their best development and highest petroliferous character in the central portion of the eastern coal field, which extends from southern Martin County through Floyd into

TILTED BASAL POTTSVILLE (LEE) CONGLOMERATE AT CREST OF PINE MOUNTAIN.

The view is to the southwest from an altitude of 1,800 feet across the Cumberland River Gap just above Pineville, Kentucky. The eroded Pine Mountain fault scarp begins at the mountain crest and continues to the right out of the picture—that is to the northwest. The heavy timber in the lower right hand portion of the picture obscures the exposed Mississippian limestones and shales. Photo by W. R. Jillson, May 16, 1919.

Knott and Breathitt, and further southwestward into Leslie, Clay and Knox. The thickness of these sands is variable, ranging from 50 to 230 feet. The "Beaver," the uppermost of the three, is generally thickest and frequently shows through many drillings in the Beaver Creek section (from which the type occurrence comes with the name) the maximum thickness. In the Beaver Creek section these three sands produce both oil and gas, and both are of very high quality, the oil going into the Cumberland Pipe Line as the regulation Somerset grade. It is a green to brown green fluid, crude and high in gasoline. The first well in the "Pottsville" in the Big Sandy Valley was drilled in by Louis H. Gormley in 1892, at the mouth of Salt Lick Creek on Right Beaver in Floyd County. This was a small flowing well and served as the nucleus for the group of what is now known as the Beaver Creek wells, many of which, including the original well known as the Howard Purchase No. 1, are

still producing, The oil coming from "Pottsville" sandstone is not uniform, there being a slight difference in the oil from each of the sands even where the cover is good and thick as in Floyd County. To the north and northwest, where the cover is thinnest as in Magoffin and Breathitt Counties, these sands have produced at much shallower depths—the pay horizon in Magoffin on Burning Fork being about 300 feet—but the oils obtained from these shallow horizons has always been black, stiffly flowing, with a very low Baume gravity, and almost entirely without gasoline content.

While the "Pottsville" may still be regarded as an important horizon for further prospecting, it is certain that if a higher gasoline oil is desired, the prospector must avoid the northeastern and westernmost borders of the eastern coal field. He must, in other words, go down into the Eastern Kentucky geosyncline, which passes through Breathitt from Clay and Knox, into Magoffin and Floyd and Pike, towards the northeast. It is very possible that other fields, as good as the Floyd County field, may be developed in this locality, and even further to the south, where the thickening of the strata, counteracting the raise in the dip, serves to keep the basal sands well protected under cover.

THE CRETACEOUS AND QUATERNARY SYSTEMS

In the Jackson Purchase region, the extreme southwestern part of the State of Kentucky, all of the rocks described above dip down under a thick cover of cretaceous and quarternary sediments both of which are monuments to the two last embayments of the Gulf of Mexico over this portion of the State. Because of this covering of thick and more recent rock strata very little indeed is known of the oil and gas sands of this area. As indicated by the fact that little is known of the subsurface geology of the Purchase it may be stated briefly that this part of Kentucky has received up to the present practically no oil and gas development at all. However, there are indications that this large area will receive some drilling attention this season and probably next, and it is possible that the cretaceous and lower sediments under this region may be found to have productive oil sands here as they have elsewhere in the United States.

GEOLOGICAL SEQUENCE OF THE OIL AND GAS SANDS OF KENTUCKY.
(With General Lithology in Superimposed Order, and Known Thickness.)
(Paleozoic Sediments.)

System	Series	Sand	Lithology in Order	Thickness in Feet
Lower Pennsylvanian	Pottsville Conglomerate	"Beaver," "Horton," "Pike" in Floyd, Knott and Pike. "Wages," "Jones," "Epperson" in Knox.	Alternating sands and shales and coals with strong conglomerate base.	60—1000
MAJOR DISCONFORMITY				
Upper Mississippian	Chester or Mauch Chunk	"Maxon"	Red shale Sandy shale White sand Shale White sand Calcareous-Shale Bastard lime } E. Ky.	30—275
			Sandstone, limestones and thin shales } W. Ky.	300—800
	St. Genevieve	"Big Lime"	Fine sands oolitic white limestone.	20—400 E. Ky.
	MINOR DISCONFORMITY		Tan sand lens	
	St. Louis	"Big Lime"	Fine gray white compact limestone.	5— 7 E. Ky. 475—1000 W. Ky.

DISCONFORMITY, EAST KENTUCKY

System	Series	Sand	Lithology in Order	Thickness in Feet
Lower Mississippian (Eastern Kentucky)	Waverly	"Keener" "Big Injun" "Squaw" "Wier" "Berea"	Clastics—sandstones and shales in Eastern Kentucky.	500 in N. E. 400—600 in E.
Lower Mississippian (Western Kentucky)	Waverly	'Stray" "Mt. Pisgah" "Beaver" "Otter" "Cooper" "Slickford" } Wayne "Amber Oil of Barren, Warren and Simpson.	Calcareous shales and limestones in Western Kentucky.	300—350 in S. 200 in S. E. 400 in W.
DISCONFORMITY				
Upper Devonian	Genesee	"Black Shale" "Strays"	Black, fissile Bituminous Fine shale	75—Southeast 240—Northeast —Southwest
DISCONFORMITY				
Middle Devonian	Hamilton Onondaga	"Corniferous," "Irvine," "Ragland" or "Campton," etc.	Cement limestone West Kentucky only. Cherty magnesian frequently porus limestone.	9 0—24 0—45

MAJOR DISCONFORMITY

System	Series	Sand	Lithology in Order	Thickness in Feet
Middle Silurian	Niagaran	"Niagaran"	Alternating thick shales and then sandy limestones.	50—250 E. of Arch 50—200 W. of Arch
		"Clinton"	Light to dark blue to reddish sandy limestone.	5—20
MINOR DISCONFORMITY				
Upper Ordovician	Cincinnatian	"Caney" "Upper Sunnybrook" Barren County "Deep" Cumberland "Shallow"	Limestone Blue shales Sandstone	450—700 + or —
DISCONFORMITY				
Middle Ordovician	Champlainian	"Upper Trenton" "Lexington"	Gray granular to Crystalline limestone	270
		"Lower Trenton" "High Bridge"	Thick bedded and compact limestone.	600 +
MAJOR DISCONFORMITY				
Lower Ordovician	Canadian	"Calciferous"	Hard sandstone Sandy limestone (All unexposed)	700—1000?
Upper Cambrian	Ozarkian?	"Knox Dolomite"	Light and dark dolomitic limestones (all unexposed)	250 +

CHAPTER VI.

THE GEOLOGY OF THE OIL AND GAS POOLS OF KENTUCKY

MAJOR STRUCTURAL FEATURES

The geology of oil and gas in the State of Kentucky is simple and at the same time complex. It is simple in its broad stratigraphic features. It is complex in its details of major and minor structure, porosity, and water pressures—hydraulic and hydrostatic. Stratigraphically, oil and gas production is secured in Kentucky, in ascending order, from the middle Ordovician limestones, up through the Silurian limestones and intercalated shales, the Devonian Limestone (Corniferous), the Devonian black shale, the Mississippian sandstones and limestones, and the lower Pennsylvanian (Pottsville) sandstone and conglomerates. No oil production is secured in Kentucky lower than the Ordovician (which, as it comes from the wells in Cumberland County near

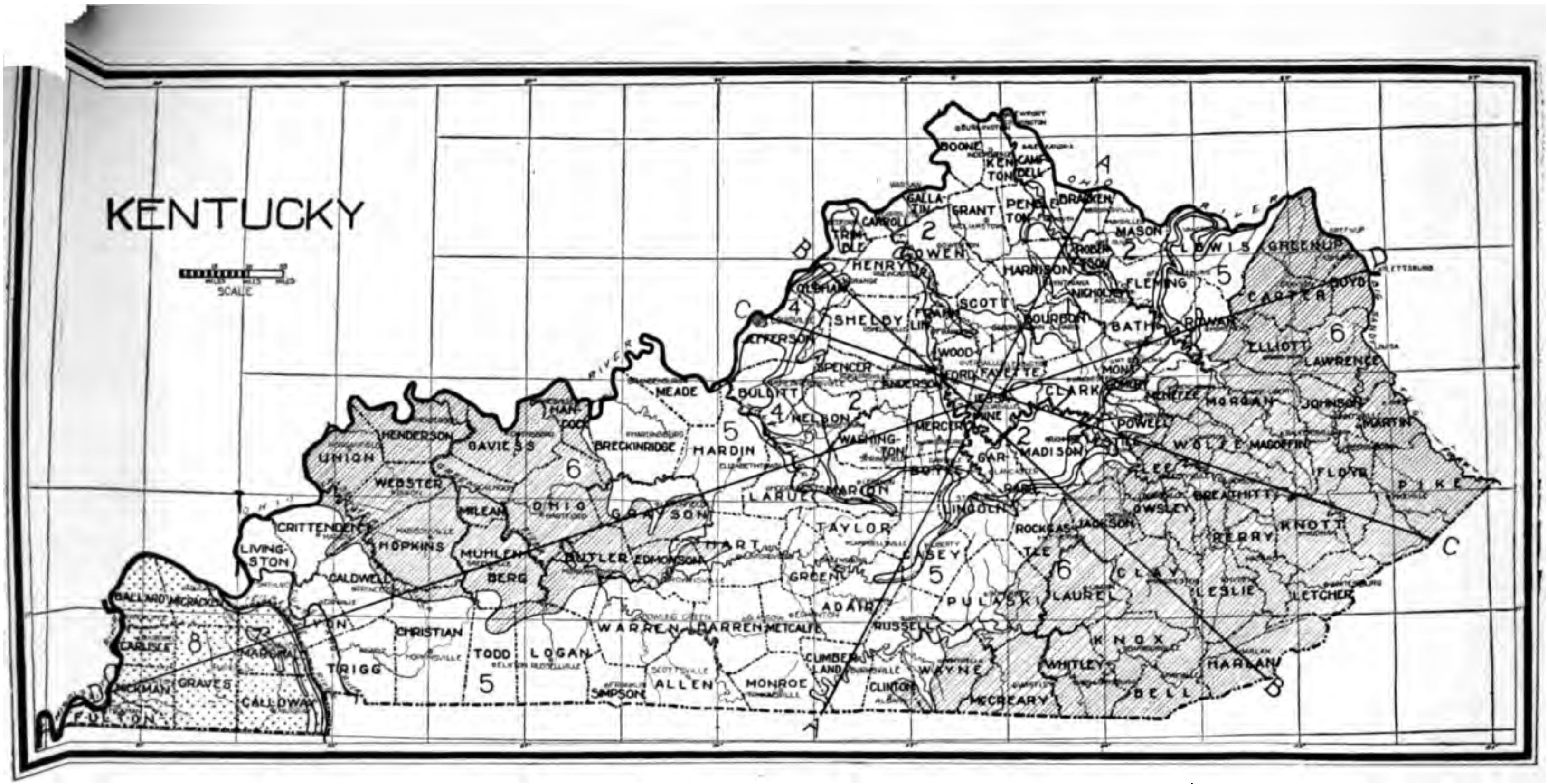
CREST OF PINE MOUNTAIN ANTICLINE

Falls on Russell Fork, Dickenson County, Virginia. Crest of the Pine Mountain Anticline. The view is just across the Pike County, Kentucky line. Photo by W. R. Jillson, April 5, 1919.

Burkesville, is probably the lowest oil horizon stratigraphically that is commercially important in the whole world) nor above the Pottsville. The latter rocks, with the exception of a few isolated ridge outlayers of the Alleghany formation in the easternmost part of Kentucky, and the mantel of Cretaceous and Cenozoic sediments in the Jackson Purchase region in extreme western Kentucky, are the highest stratigraphically in the State.

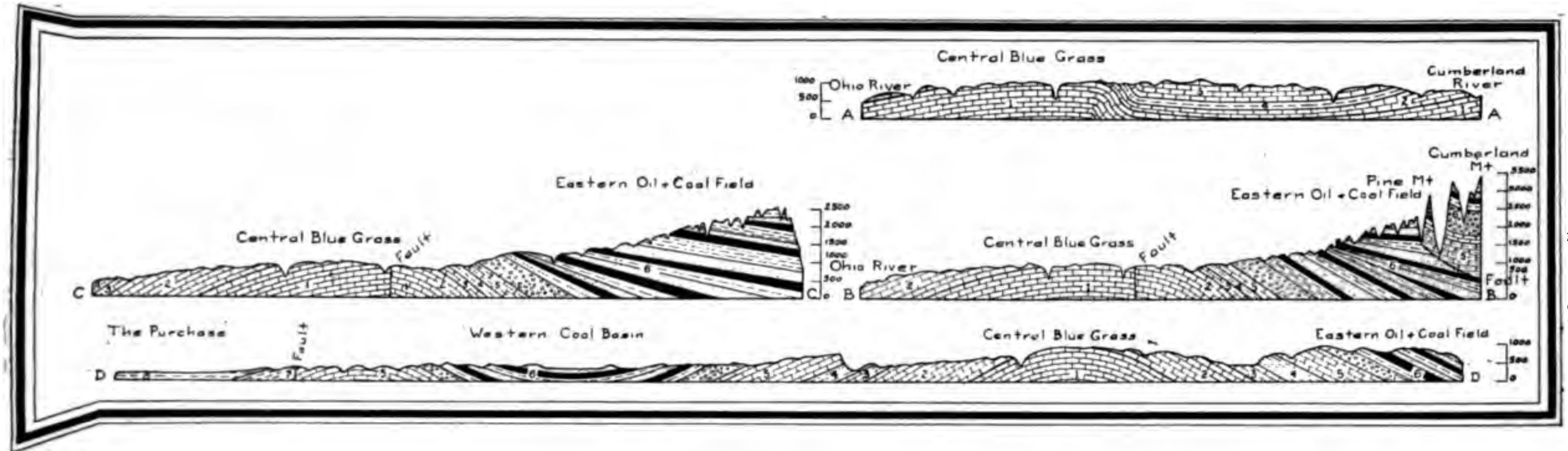
The combination of major and minor structure, porosity, and water conditions as found by the prospecting bit, are variable and, it may be said, almost always special to the locality in which they are developed. In this respect it may be added that the same conditions of structure, porosity and subsurface water, are rarely found equal in any two locations. The theory of oil and gas accumulation in Kentucky, is in a broad way, special to the State, since the major portion of the oil as now known in Kentucky, is secured from limestone horizons. The occurrence of oil in a limestone precludes the greater part of the general explanation attending oil and gas accumulations where found, as in most instances, in typical sandstones. In Kentucky, then, there exists the unusual terminology among drillers of "oil sand" or "pay sand" phrases used in reference generally to either the Onondagan or Niagaran limestones in their porous strata, although they are not sandstone strata at all.

The geologic structure of Kentucky is readily understandable. The central Blue Grass portion is a large flat dome, often spoken of as the Lexington dome, on a much larger structure known as the Cincinnati arch or anticline. This large structure extends from northwestern Ohio and Indiana southwestward into Kentucky where it reaches a high point in the vicinity of Nicholasville, and then descends along its major axis to a saddle which is found in Adair, Russell and Casey Counties, Kentucky. The major axis of the Cincinnati anticline then rises and continues on to the southwest, culminating in another dome or high section in the vicinity and to the south of Nashville, Tennessee. Falling off to the southeast and to the northwest the rocks of the eastern and western sections of the State go into syn-



SKETCH MAP SHOWING THE AREAL GEOLOGY OF KENTUCKY.

1. and 2. Ordovician
3. Silurian
4. Devonian
5. Mississippian
6. Pennsylvanian
7. Cretaceous
8. Quaternary
9. Recent



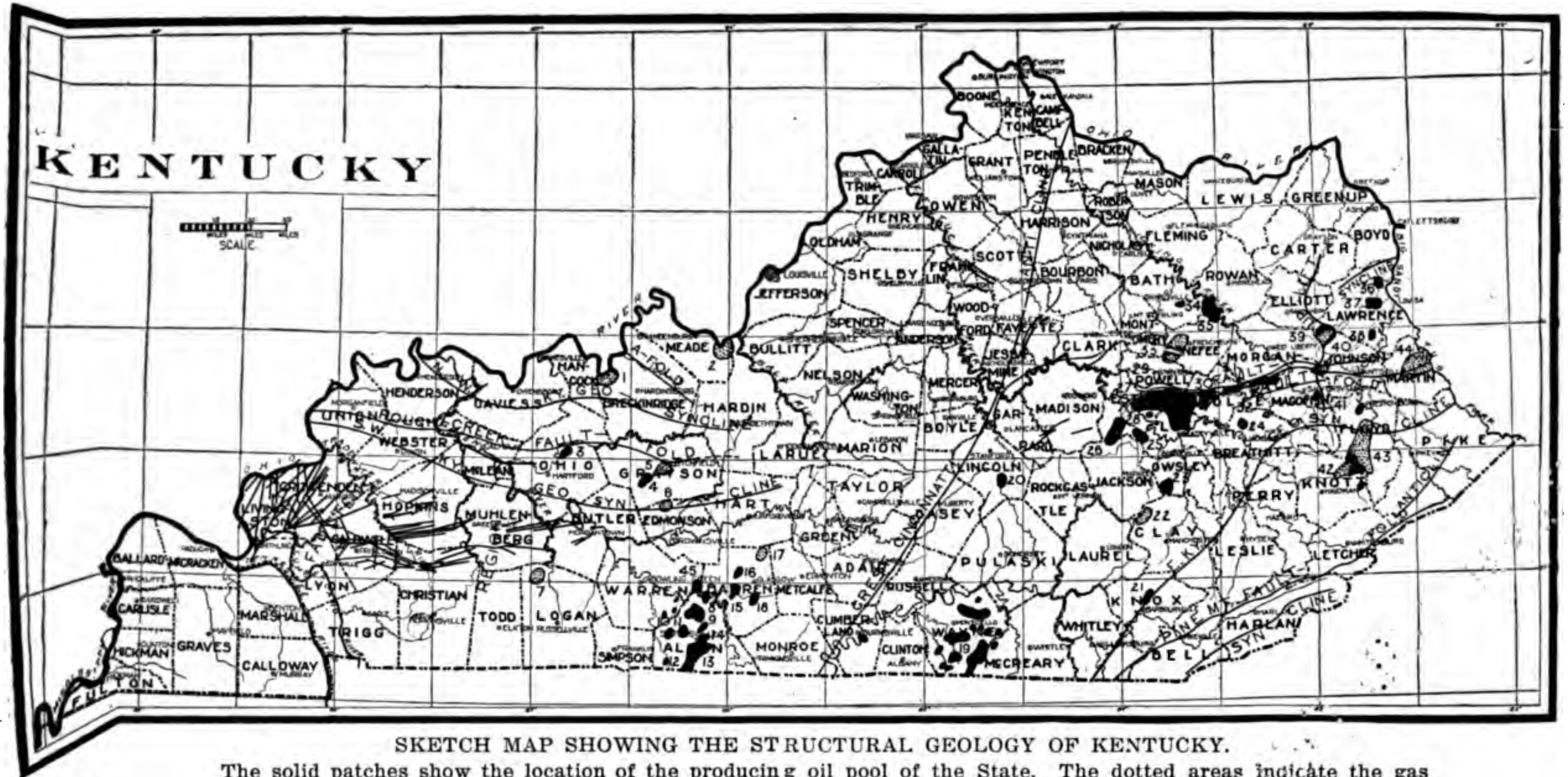
DIAGRAMMATIC SECTIONS SHOWING THE STRUCTURAL GEOLOGY OF KENTUCKY.

The lettering of these sections corresponds to the lettering of the heavy lines on the opposite sketch map. The numbering of the formations in the sections corresponds to the numbering on the areal geologic map shown on the opposite page. These sections are all drawn to scale and are as accurate as the figures will allow.

clinal basins which are centered in the eastern and Meade and Breckinridge Counties. Using the local field Pine Mountain fault, a result of the breaking along

VERTICAL SANDSTONE AND SHALE, PINE MOUNTAIN FAULT.
On east side of Louisville & Nashville Railroad cut southeast of the mouth of Straight Creek, Bell County, Ky. Photo by W. R. Jillson, May 16, 1919.

the crest of a northeast-southwest fold, gives the strata of the southeasternmost portion of the State a northwest dip. The doming associated with the faulting of western Kentucky, northeast of the Cumberland and Tennessee Rivers, has resulted in giving the rocks of this section a dip to the northeast. A broad conception then of the structural geology of Kentucky suggests a series of folds beginning at the Virginia line in eastern Kentucky, that drops into the eastern Kentucky geosyncline;



SKETCH MAP SHOWING THE STRUCTURAL GEOLOGY OF KENTUCKY.

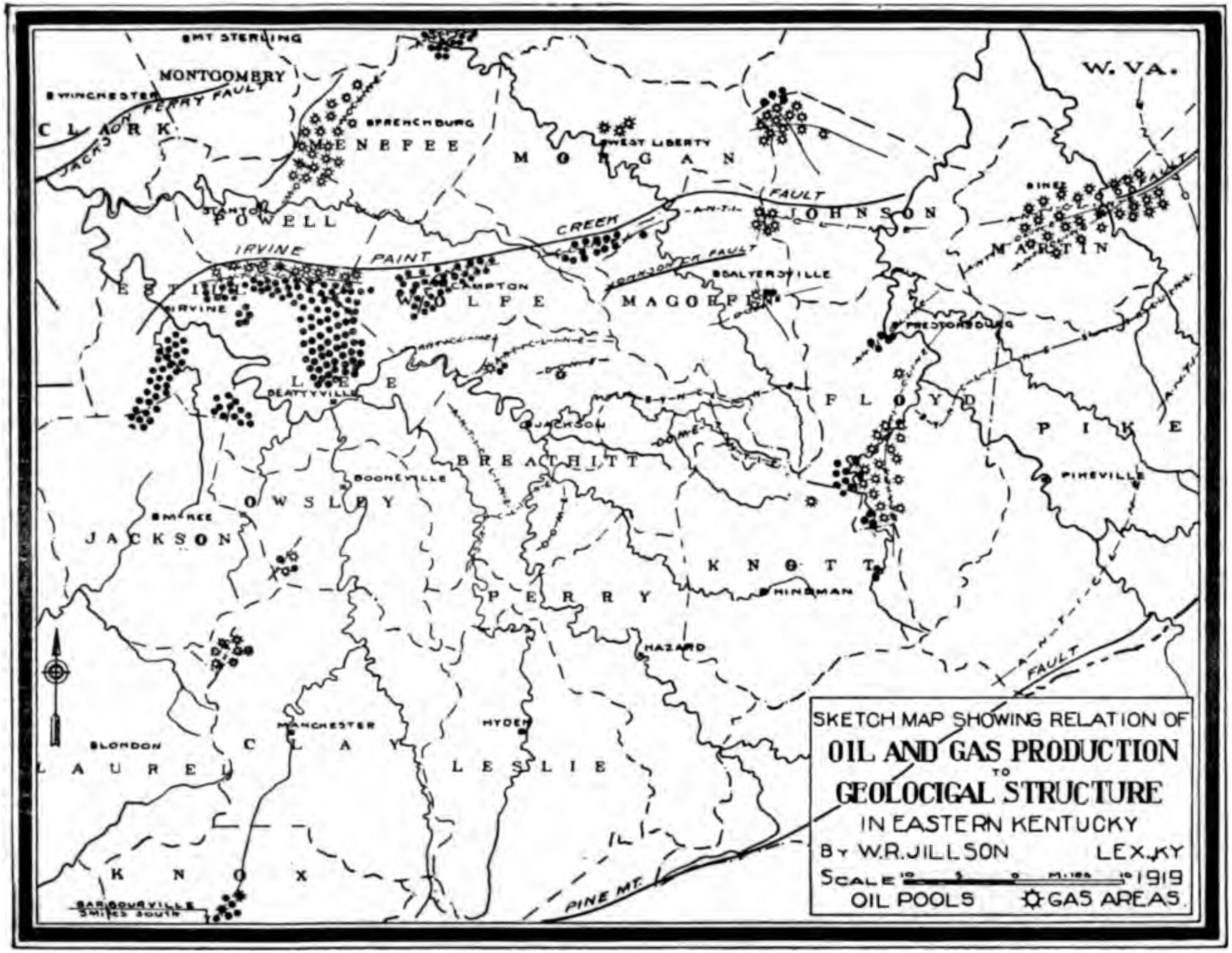
The solid patches show the location of the producing oil pool of the State. The dotted areas indicate the gas **producing fields. Both oil and gas pools are numbered to correspond to text.**

rises over the crest of the great Cincinnati arch; drops again into the syncline of the western coal fields, and rises again to the Cumberland and Tennessee Rivers and then falls off to the west and southwest to unknown depths under the Jackson Purchase region. This conception of the structure of Kentucky is fundamentally important to an understanding of the oil and gas fields of this State for it has been the important factor in influencing the movement of petroleum from its original position, and the concentration of petroleum in commercially important pools.

Somewhat less important from a structural standpoint but very important from a standpoint of the location of the main producing pools of Kentucky is the location of an east-west line of minor structure in Kentucky. This structure has been called in eastern Kentucky the Irvine-Paint Creek-Warfield fault and fold. In central Kentucky from Irvine west to New Haven it has been designated as the Kentucky River fault and fold. From New Haven westward through Leitchfield to Shawneetown in westermost Union County it has been called the Rough Creek fault and fold. Although all of this minor structure has not been worked out and definitely connected up, there is little doubt but that the same crustal forces were responsible for the development of these three segments along a unit line of deformation. This east-west extension of small structure is directly responsible for the location of the Warfield-Inez gas field, the Paint Creek gas field, the Cannel City, Campton, Big Sinking, Irvine, Station Camp, Ross Creek, Ashley, and associated pools in eastern Kentucky as well as the Hartford and Leitchfield pools in western Kentucky.

Detailed Discussion of Separate Oil and Gas Pools

In the State of Kentucky there are at the present time forty-six separate and commercially important oil and gas pools. These are located principally in the eastern coal field on either side of the Irvine-Paint Creek-Warfield fault and fold; in southern Kentucky, in Knox, Wayne, Barren, Allen and Warren Counties; and in Western Kentucky, along the Rough Creek fault and fold in Grayson and Ohio Counties. Two small pools


SKETCH MAP SHOWING RELATION OF
OIL AND GAS PRODUCTION
TO
GEOLOCIGAL STRUCTURE
IN EASTERN KENTUCKY
BY W.R.JILLSON
LEX.KY
1919
SCALE 10 5 0 MILES 10
OIL POOLS
GAS AREAS
W. VA.
MT STERLING
MONTGOMERY
WINCHESTER
FERRY FAULT
CLARK
MENEFEE
FRENCHBURG
MORGAN
WEST LIBERTY
POWELL
IRVINE
PAINT
CREEK
FAULT
JOHNSON
MARTIN
ESTILL
WOLFE
CAMPTON
MAGOFFIN
SALYERSVILLE
PRESTONSBURG
LEE
BEATTYVILLE
FLOYD
PIKE
PIKEVILLE
JACKSON
BREATHITT
BOONEVILLE
OWSLEY
McKEE
KNOTT
HINDMAN
PERRY
HAZARD
MANCHESTER
CLAY
HYDEN
LESLIE
LONDON
LAUREL
KNOX
BARBOURVILLE
PINE MT.
FAULT

alone adjoin the Ohio River in western Kentucky in Meade and Breckinridge Counties. Using the local field name, a brief statement of the geology of each separate pool is given below, the pools being arranged in crescentric order from northwest to south to northeast.

(1) *Clover Port Gas Field.*—This is an old gas pool located in the northwestern portion of Breckinridge County adjoining the Ohio River. The pool is of diminishing commercial importance. Production was secured at shallow depths from the Warsaw formation in the Mississippian System. The structure of this gas field is a small dome.

(2) *Rock Haven Gas Field.*—The gas from this field which is commonly known as the Meade County field from its location in eastern Meade County adjoining the Ohio River, comes from a thin sand inclusion in the Devonian black shale. The gas production of this field, never large, is of decreasing importance.

(3) *Hartford Oil Pool.*—The oil in this pool is secured from above the Devonian black shale. The pool is

HARTFORD OIL POOL STORAGE.

Besides the Tank House this view shows Swell well No. 1. From four small wells in this pool 167 tank cars have been shipped to date. Photo by W. R. Jillson, 1918.

PART OF THE HARTFORD OIL POOL.

Reading from left to right the wells are: Swell No. 1, drilled to 1,780 feet in 1914; Howard No. 2, drilled to 1,760 feet in 1913; and Vance No. 1, drilled to 1,780 feet in 1914. Photo by W. R. Jillson.

small and of recent development in the central portion of the Ohio County. Its structure is associated with that of the Rough Creek fault and fold.

(4) *Caneyville Oil Pool.*—This pool is located in southwestern Grayson County. Oil is secured from the base of the Mississippian series, chiefly from the Waverly. The structure is developed by the Rough Creek fault and fold.

(5) *Leitchfield Oil and Gas Field.*—The history of this oil and gas field is recent. Gas production is secured from the Major sand of the Waverly limestones of the Mississippian. The structure is a strong half dome developed by the Rough Creek fault.

(6) *Bear Creek Gas Field.*—Located in northern Edmonson County, this gas pool is of recent development on a small dome.

(7) *Diamond Springs Gas Field.*—Gas was secured at Diamond Springs from stray sands on a monoclinal dip or terrace in the Cypress and Waverly forma-

tions. The field is located in the northwestern part of Logan County.

(8) *Jewell Oil Pool.*—This pool is located in the northernmost part of Allen County and in what is known as the "Jewell Bend" of Barren River. Oil production is secured from the Onondaga or Corniferous limestone on a small anticline.

(9) *Gainesville Oil Pool.*—This is the northernmost pool of outstanding importance in northern Allen County and is located just west of Gainesville on several associated small structures. The oil is anticlinal. Production is obtained from the Onondagan and Niagaran limetones.

OIL STORAGE ON W. M. FOSTER LEASE.
This is a fine producing property, in the southeastern part of Gainesville Pool, Allen County. Photo by W. R. Jillson, July 10, 1919.

(10) *Butlersville Pool.*—This small pool is located about seven miles west of Scottsville in Allen County. Production is anticlinal. The oil horizon is the Onondaga limestone. The drilling is shallow.

(11) *Halfway Oil Pool.*—About a mile and a half northeast of Halfway, and about seven miles northwest of the Scottsville, in Allen County, there is a rapidly developing oil pool which has been designated by the name of the adjoining post office of Halfway. The wells in

this pool are not large but are steady and consistent producers. The oil is anticlinal and is secured from the Onondaga and Niagaran limestones. The wells are shallow.

(12) *Rodemer and Petroleum Oil Pools.*—These pools are located respectively three and five miles southwest of Scottsville, Allen County. They include many pools of small size which must remain unnamed. One of these properties deserves mention since it has had gusher production. This is the Angie McReynolds lease. The oil here is controlled by porosity rather than simple structure and is both anticlinal and synclinal. Gas pressure is an important factor. Production comes from the Niagaran limestone. Shallow drilling obtains.

(13) *Adolphus Oil Pool.*—The Adolphus and associated pools are located about seven and one-half miles

A BARREN COUNTY WELL FLOWING NATURALLY

The J. R. Winlock No. 3 (flowing) well drilled in by the J. M. Karl Oil Company. March 14, 1919. Located on the northward extension of the Steffy Pool on the Lower Road to Bowling Green, three and one-half miles southeast of Glasgow, Barren County, Ky. This well flowed light green oil 44.6 Baume during a half hour gauge by the writer, one barrel every five minutes. The well made considerable gas, but no water. Photo by W. R. Jillson, March 31, 1919.

southwest of Scottsville, Allen County, close to the Tennessee line. The oil is both anclinal and synclinal because of a lack of water in some places. Production comes from the Niagaran limestone. Shallow drilling obtains.

(14) *Scottsville Oil Pool.*—The Scottsville oil pool is really a group of small oil pools developed on a number of small structures. Production is for the most part anticlinal and is secured from the Onondaga and Niagaran limestones. The wells are shallow and some of them have shown large flush production with gas.

(15) *Steffy Oil Pool.*—This old oil pool which is now undergoing redrilling and extension to the northeast and southwest is located about five miles southwest of Glasgow on the lower Bowling Green road. The oil is anticlinal with strong gas head in some wells. Production comes from the Onondaga limestone and flows natural in a few of the wells. The drilling is shallow.

(16) *Oil City Oil Pool.*—This pool is a number of years old but it is at present the center of farther prospecting. It is located about five miles northwest of Glasgow in Barren County. The drilling is shallow, and in a few of the wells small amber oil production is now being pumped from restricted stray sands. These are just above the Devonian black shale in the lower part of the Mississippian limestones, the Fort Payne and Warsaw.

(17) *Hiseville Gas Field.*—The Barren County gas field now commonly known as the Hiseville gas field is located about nine miles northeast of Glasgow. A number of very good gas wells are located in this field and it promises to be important as it is further proved. It is doubtful if the Onondaga is present here. The production is probably secured from the Niagaran limestones and perhaps lower horizons. The gas production is dependent upon structure.

(18) *Oskamp Oil Pool.*—The Oskamp pool located about five miles south of Glasgow in Barren County produces some gas and considerable oil, all from small wells. The production comes from the Onondaga, which is thin, and the Niagaran below. The drilling is shallow.

(19) *Wayne County Associated Oil Pools.*—These associated pools were discovered and the territory was proven a number of years ago. The field has repeatedly

been redrilled. The oil pools are distributed widely over Wayne County and extend eastward into McCreary County. The production is both deep and shallow. It is usually anticlinal. The Mississippian sediments belonging to the Waverly group give the following productive sands: Stray, Mt. Pisgah, Beaver, Otter, Cooper, Slickford. The upper and lower Ordovician limestones give the upper and the lower Sunnybrook and the deep "Sand" of Wayne County.

(20) *Buck Creek Oil Pool.*—The Buck Creek oil pool is located about three miles southeast of Highland and about four miles due east of Kings Mountain in Lincoln County. The production is anticlinal and is secured from the Onondaga limestone at a very shallow depth. Pipe line connections are made to the Q. & C. R. R. at Kings Mountain.

(21) *Little Richland Creek Oil and Gas Field.*—This old, oil and gas field now being redrilled and extended is located about four miles north of Barbourville, Knox County. The field is located in the eastern Kentucky geosyncline and oil is secured from the Wages, Jones, Epperson and Knox sands of the Pottsville series. Drilling is usually medium deep but generally under a thousand feet. Very little deep drilling has been done in this locality and little is known about the lower "sands."

(22) *Burning Springs Gas Field.*—This field is of recent development and is located in northwestern Clay County. Production is secured from the Big Injun and associated sands of the Mississippian system. The structure is a doming anticline.

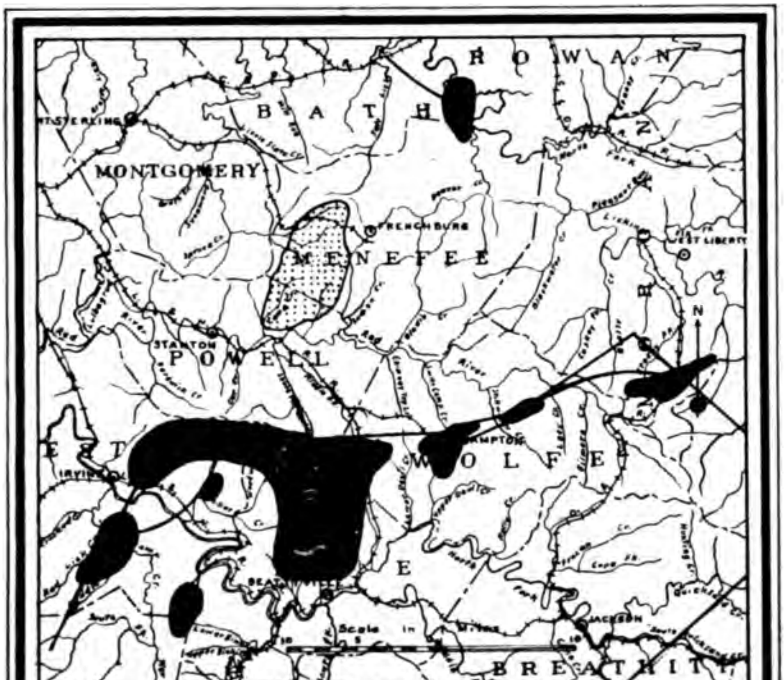
(23) *The Island Creek Oil and Gas Field.*—Of recent development, this field promises to be an important one when its full extent is known. It is located in southwestern Owsley County, on anticlinal structure. Production is secured from the Mississippian and Devonian sediments.

(24) *Frozen Creek Oil and Gas Field.*—The Frozen Creek anticline somtimes called the Wilhurst anticline is responsible for this field. The structure is located in the northwestern Breathitt County. Production is procured from the Onondaga limestone.

(25) *Ross Creek Oil Pool.*—This small but highly productive oil pool is located on a small anticline in southeastern Estill County. Very porus conditions in the Onondaga limestone are chiefly responsible for the oil accumulation. The field has been over drilled by greedy operators. Shallow drilling depths exist in this pool.

(26) *Station Camp Oil Pool.*—The Station Camp oil pool is located on Station Camp Creek, about five miles south of Irvine in Estill County. The production is secured from the Onondaga limestone, which is both anticlinal and shallow in this locality.

(27) *Irvine Oil Pool.*—This famous oil pool is the parent, from a discovery standpoint, of the present large number of oil pools in this section of Kentucky. Drilling



THE MOST CELEBRATED KENTUCKY OIL FIELD.

This sketch map of the Estill, Lee, Powell, Wolfe, Morgan, Menifee, Bath and Rowan county district shows in outline the most important producing oil and gas fields in the State of Kentucky.

was first done in this section in 1903 in very shallow wells near Irvine and Ravenna. Later extension of the Irvine pool to the east developed the possibilities of deeper prospecting in this region. Production is anticlinal and is secured from the Onondaga and Niagaran limestones which are irregularly porous.

(28) *Big Sinking Oil Pool.*—The Big Sinking oil pool is the most important oil pool in the whole State of Kentucky. Very porous conditions in the Onondagan and Niagaran limestones, which are the productive "sands" coupled with a number of small associated anticlines and water pressures from the southeast, have combined to make this the most productive oil pool in the State. The drilling is under one thousand feet for the first "pay" but deeper wells have been drilled. The pool is located in central Lee County.

(29) *The Ashley Oil Pool.*—This pool was developed in 1918, as the result of wildcat extension east of the Irvine pool. Production is secured from a very porous "pay" in the Onondaga limestone on structure. The most of the wells in this section have been large producers.

(30) *Campton Oil Pool.*—This pool is located in the west central part of Wolfe County, near Campton. Oil production is secured from the Onondaga limestone at medium depths. The structure of this field is anticlinal.

(31) *Still Water Oil Pool.*—The Still Water oil pool is located in the north central part of Wolfe County, south of the Irvine Paint Creek fault. The production is secured from the Onondaga, and the structure is anticlinal.

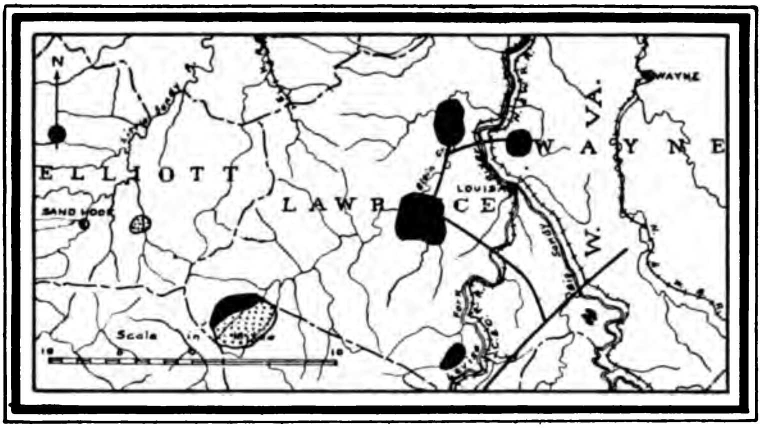
(32) *Cannel City Pool.*—This oil and gas pool is located in southern Morgan County, south of the Irvine-Paint Creek fault. Structure is anticlinal and the drilling is of medium depth. This pool was brought in with gusher production several years ago, from a few wells. The producing sand is the Onondaga limestone.

(33) *Menifee Gas Field.*—This Gas field is located in the southwestern Menifee and northeastern Powell Counties. The structure and gas production is secured from the Onondaga limestone. The structure is monoclinal.

(34) *Olympia Oil Pool.*—This small pool is located in the southeastern part of Bath County. Drilling is shallow. The structure is small. Production is from the Onondaga limestones.

(35) *Ragland Oil Pool.*—The Ragland pool is located in Bath, Rowan and Menifee Counties, on the Licking River. It is one of the oldest pools in the eastern part of Kentucky. Production is monoclinal, and is secured from the Onondaga limestone, at a shallow depth. The oil is dark and low in gravity.

(36) *Fallsburg Oil Pool.*—The Fallsburg oil pool is located in northern Lawrence County. The structure is close to a deep syncline. Production is secured from the Berea sand at a medium depth.



OIL FIELDS OF LAWRENCE COUNTY, KY.

These are the most important in north-eastern Kentucky. Production is secured in the Berea Grit.

(37) *Busseyville Oil Pool.*—This pool is located in central Lawrence County, west of Louisa. The field is located on a monocline just south of a deep syncline, and is controlled by minor structures. Production is secured at medium depth from the Berea.

(38) *George's Creek Oil Pool.*—George's Creek oil pool is located in southern Lawrence County. It is a small pool, lying on monoclinal dip to the north. Production is secured from the Berea and Wier sands.

(39) *Laurel Creek Oil and Gas Field.*—The field is located in the northwestern part of Johnson County and the southwestern part of Lawrence County, on the pronounced Laurel Creek dome. Gas production is secured on the high points. Oil is secured on the northern flank from the Wier and Berea sands. Drilling is to a moderate depth.

(40) *Paint Creek Oil and Gas Field.*—This important field is of recent development and is located on Paint Creek dome, sometimes called the Mine Fork dome on the Morgan and Johnson County line. It is located on the high doming structure just south of the Irvine-Paint Creek fault. Up until recently, this structure looked like a gas field but with the bringing in of an oil well, during this summer, down on the south flank, its importance as an oil territory is being established. The production is found in the Wier sand of the Mississippian, at about thirteen to fifteen hundred feet.

(41) *Ivyton Oil Field.*—This small pool is located in central southern Magoffin County on the Ivyton dome. The production is from shallow Pottsville sands and the deeper Wier sand. The Pottsville oil is dark, low in gravity, and flows stiffly. The Wier sand oil is green, of high gravity, and flows freely.

(42) *Beaver Creek Oil Pool.*—This is the oldest pool in eastern Kentucky, flowing production having been drilled in at the mouth of Salt Creek, on right Beaver Creek in 1892. The production is synclinal and is secured from four definite sands, Beaver, Horton, Pike and Maxon. The first three are in the Pottsville conglomerate. The Maxon is in the Mauch Chunk. Drilling is to a maximum depth of one thousand feet.

(43) *Beaver Creek Gas Field.*—This field is located in Floyd and Knott Counties on Beaver Creek and its branches. Production is anticlinal and is secured from the Beaver, Horton and Pike of the Pottsville; from the Maxon, Big Lime, Big Injun, of the Mississippian system; and from the Devonian black shale. Gas is secured at various depths as indicated by this long range of sands. The deepest production is found on the left Beaver Creek at two thousand feet.

(44) *Inez Gas Field.*—This field is sometimes called the Martin County field. Large gas production which has been drilled in since 1892 is secured in the anticlinal position, from the Big Lime and Big Injun of the Mississippian system. Drilling is to a depth of from one thousand to fifteen hundred feet.

(45) *Moulder Oil Pool.*—This is the latest of important oil pools in southern Kentucky. It is located in the extreme southeastern portion of Warren County, adjoining Barren County and also Barren River. Phenomenally large production for the state of Kentucky was secured from one or two wells. This is a new pool in which salt water conditions, as well as the gas are of importance. Production is secured on the eastern dip of the Onondaga limestone, which is very porous in places in this pool.

(46) *The Green Hill Oil Pool.*—Production in the Green Hill pool of Warren County comes from about thirty wells drilled slightly to the northeast of Green Hill postoffice. The structure has not been determined. Oil is secured from four "porous-pays" in the Onondaga and Niagara. Drilling is to a depth of about 410 to 450 feet.

KENTUCKY'S LARGEST FLUSH PRODUCTION WELL
Jake Moulder, No. 8, Warren County, Ky.

CHAPTER VII.

GEOGRAPHIC DISTRIBUTION OF OIL AND GAS IN KENTUCKY.

Many newcomers as well as natives of the State of Kentucky are unfamiliar with the location of the oil and gas fields of this State, even within general limits. The geography of oil and gas production, and the geography of the probably productive oil and gas strata, are but very slightly clarified in the minds of most people. With the exception of those who have made a special study of the matter (which group, though small and select, includes the highest type of oil operator) most casually interested persons do not understand that there is a vast difference from the standpoint of oil and gas recovery, among the various counties in Kentucky. Unfortunately it is not given to all to see the sound geologic reasons for this differing importance as between various parts of the State.

It is a matter of simple substantiation, however, that this difference does exist and for this reason it becomes important to mark off the various sections. In a broad way the State of Kentucky is divided into seven distinct regions on a basis of geology, These are: (1) The Eastern Coal Field, (2) The Knobs Crescent (enclosing the central Blue Grass), (3) The Central Blue Grass, (4) The Central-Southern Limestone Region, (includes the "Pennyrile"), (5) The Western Coal Field, (6) The Western Faulted, Lead, Zinc and Fluorspar Section, and (7) The Jackson Purchase. Happily the geographic distribution of oil and gas productive strata is quite limited to this division of Kentucky into seven parts. For this reason the use of these divisions facilitates the description of the productive and unproductive areas in the State. Within general limits, four of these regions may be said to be productive or to have productive possibilities. These are: (1) The Eastern Coal Field, (2) The Knobs Crescent, (4) The Central-

Southern Limestone Region, and (5) The Western Coal Field. The other three, the (3) The Central Blue Grass, (6) TheWestern Faulted Lead, Zinc, and Fluorspar section, and (7) The Jackson Purchase may be classified as very poorly productive, non-productive, or unknown.

A knowledge of the location of any small area within these broader limits of the seven larger divisions of the State will assist the layman in forming some conclusions as to the productive possibilities of the tract in which he is interested. However, to give still greater precision to the many who are interested, each of the one hundred and twenty counties in the State is here taken up separately. General statements concerning its location, aereal geology, physiography, drainage, structural location, and oil and gas development or possibilities are made. These are not exhaustive county reports. The scope of this book disallows all except summary statements, which are intended to be used as an index of present conditions and future possibilities. The counties are arranged below in alphabetical order.

DISCUSSION OF OIL AND GAS IN KENTUCKY

Adair—No. 1.

Location.—Southern Central Kentucky.

Surface Geology.—Mississippian limestones and shales, Devonian black shale.

Physiography.—Dissected plain, low rolling hills.

Drainage.—Russell fork of Green River, Crocus Creek of Cumberland River.

Structural Location.—West side of saddle of the Cincinnati anticline. This county contains a number of small structures.

Oil and Gas Development.—Oil and gas developments are recent. There are a few small producing wells in the county and considerable drilling is now going forward.

Allen—No. 2.

Location.—Southern-central Kentucky adjoining the Tennessee line.

SURFACE GEOLOGY.—Mississippian limestone and shales, Devonian black shale, Onondaga limestone, Silurian (Niagara) limestone.

PHYSIOGRAPHY.—Northwestern sloping; plain dissected by entrenched meandering; imperfect drainage with sink holes, in northwestern section.

DRAINAGE.—Middle Fork, Trammel Fork, and Bays Fork of Barren River.

STRUCTURAL LOCATION.—North side of Nashville dome of Cincinnati arch, normal dip to the northwest. This county has a great many small folds mostly with northeastern and southwestern axes. Where these folds occur in porous places of the Onondaga limestone and sandy places of the Niagara limestone, oil is generally found in commercial quantities.

OIL AND GAS DEVELOPMENT.—An extensive development has taken place in Allen County. There are at present about two hundred rigs at work and not less than two thousand wells have been drilled. The most

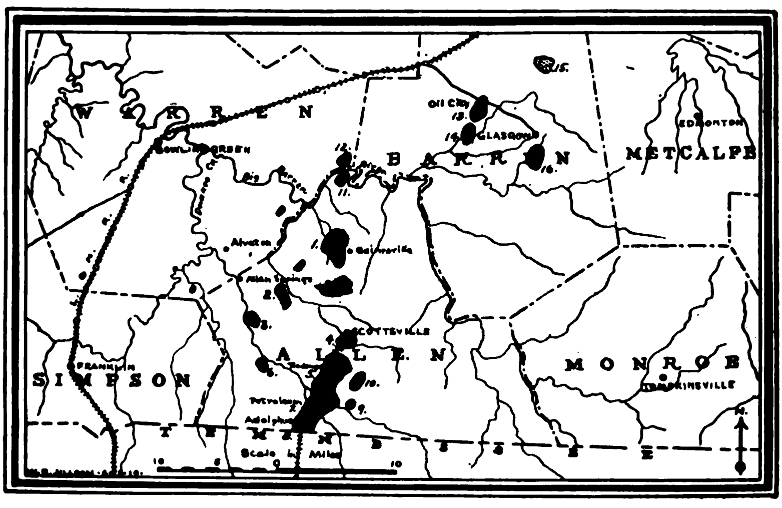


FIG. 1. SKETCH MAP, ALLEN AND ADJOINING COUNTIES.

As shown above the principal Oil and Gas Pools of Allen County are: 1. Gainesville; 2. Bays Fork; 3. Butlersville, 4. Scottsville; 5. Rodemer; 6. Trammel Creek; 7. Petroleum; 8. Adolphus; 9. Rough Creek; 10. East Rodemer; 11. Jewell; 12. Moulder; 13. Oil City; 14. Steffy; 15. Hiseville; and, 16. Oskamp.

important wells of Allen County are in pools at Gainesville, Bays Fork, Butlersville, Scottsville, Rodemer, Trammel Creek, Petroleum, Adolphus, Rough Creek, East Rodemer, Motley, Angie MeReynolds and Jewell Bend of the Barren River in the northern part of the county.

Two pipe lines connect with these fields, one from Gainesville pool to Bowling Green, the Bowling Green Pipe Line Co., inc., and the other from Gainesville to Scottsville, the Indian Refining Company. The oil from the southern section of Kentucky is taken out by tank cars over the Louisville & Nashville Railroad. The principal producing territory in Allen County is in the central and western portions. The very eastern portion of Allen County, so far, has not proved productive.

ANDERSON—No. 3.

LOCATION.—This is a Blue Grass county, and because of this fact is not important from the standpoint of oil and gas prospecting. There is no oil and gas development work progressing in this county at present.

BALLARD—No. 4.

LOCATION.—Ballard County is situated in the extreme western part of the State, adjoining the Ohio and Mississippi Rivers. This county is in the Jackson Purchase section and its oil possibilities, due to lack of development, are unknown.

BARREN—No. 5.

LOCATION.—Central-southern Kentucky.

SURFACE GEOLOGY.—Mississippian limestones and shales, in the upland; Devonian shale and limestones in some creek and river bottoms. A few isolated exposures of Silurian limestones occur along the Barren River above and below the mouth of Glovers Creek.

PHYSIOGRAPHY.—Northwestern sloping table land, deeply dissected in southwestern portion.

DRAINAGE—Beaver and Skeggs Creeks and other small tributaries of the Barren River.

SOUTH DIPPING BEDS.

View is at the spring house on the Dipp farm on the Burkesville road southeast of Glasgow. The photo shows the southern flank of the elongated Anticline. Photo by W. R. Jillson, July 16, 1919.

STRUCTURAL LOCATION.—Western flank of the saddle of Cincinnati anticline. This county has a large number of minor anticlines, whose major axes lie in a northeast and southeastern direction.

OIL AND GAS DEVELOPMENT.—There is considerable new and old development in this county. The producing pools are: Steffey, oil; Oil City, oil; Oskamp, oil; Hiseville, gas. Production is found both in the Onondaga and Niagara limestones. A small amount of oil is found at Oil City in the "stray sand" in the base of the Mississippian limestones.

BATH—No. 6.

LOCATION.—Northeastern-central Kentucky.

SURFACE GEOLOGY.—The surface rocks of this county in ascending order are Ordovician limestones, Silurian limestones, Devonian limestones and shales, Mississippian limestones.

important wells of Allen County are in pools at Gainesville, Bays Fork, Butlersville, Scottsville, Rodemer, Trammel Creek, Petroleum, Adolphus, Rough Creek, East Rodemer, Motley, Angie McReynolds and Jewell Bend of the Barren River in the northern part of the county.

Two pipe lines connect with these fields, one from Gainesville pool to Bowling Green, the Bowling Green Pipe Line Co., inc., and the other from Gainesville to Scottsville, the Indian Refining Company. The oil from the southern section of Kentucky is taken out by tank cars over the Louisville & Nashville Railroad. The principal producing territory in Allen County is in the central and western portions. The very eastern portion of Allen County, so far, has not proved productive.

Anderson—No. 3.

Location.—This is a Blue Grass county, and because of this fact is not important from the standpoint of oil and gas prospecting. There is no oil and gas development work progressing in this county at present.

Ballard—No. 4.

Location.—Ballard County is situated in the extreme western part of the State, adjoining the Ohio and Mississippi Rivers. This county is in the Jackson Purchase section and its oil possibilities, due to lack of development, are unknown.

Barren—No. 5.

Location.—Central-southern Kentucky.

Surface Geology.—Mississippian limestones and shales, in the upland; Devonian shale and limestones in some creek and river bottoms. A few isolated exposures of Silurian limestones occur along the Barren River above and below the mouth of Glovers Creek.

Physiography.—Northwestern sloping table land, deeply dissected in southwestern portion.

DRAINAGE—Beaver and Skeggs Creeks and other small tributaries of the Barren River.

SOUTH DIPPING BEDS.

View is at the spring house on the Dipp farm on the Burkesville road southeast of Glasgow. The photo shows the southern flank of the elongated Anticline. Photo by W. R. Jillson, July 16, 1919.

STRUCTURAL LOCATION.—Western flank of the saddle of Cincinnati anticline. This county has a large number of minor anticlines, whose major axes lie in a northeast and southeastern direction.

OIL AND GAS DEVELOPMENT.—There is considerable new and old development in this county. The producing pools are: Steffey, oil; Oil City, oil; Oskamp, oil; Hiseville, gas. Production is found both in the Onondaga and Niagara limestones. A small amount of oil is found at Oil City in the "stray sand" in the base of the Mississippian limestones.

BATH—No. 6.

LOCATION.—Northeastern-central Kentucky.

SURFACE GEOLOGY.—The surface rocks of this county in ascending order are Ordovician limestones, Silurian limestones, Devonian limestones and shales, Mississippian limestones.

PHYSIOGRAPHY.—Undulatory topography in the western part of the county; Knobs region in the eastern part of the county.

DRAINAGE.—Licking River.

STRUCTURAL LOCATION.—Well up on the southeastern flank of the Lexington dome of the Cincinnati anticline. This county contains a number of small structures, principally anticlines.

OIL AND GAS DEVELOPMENT.—Bath County contains part of the Ragland oil field, in its southeastern extremity. It also contains the Olympia pool.

TILTED WAVERLY SHALES, PINEVILLE, KY.

The view is from the Louisville and Nashville tracks looking toward the northeast. Photo by W. R. Jillson, May 16, 1919.

BELL—No. 7.

LOCATION.—Southeastern Kentucky, adjoining the Tennessee and Virginia lines.

SURFACE GEOLOGY.—Although located in the eastern coal fields, this county is unimportant, due to the amount of sharp folding and faulting, from an oil and gas standpoint. It is located principally in a deep synclinal structure between the Pine and Cumberland Mountains.

BOONE—No. 8.

LOCATION.—The northernmost section of the State. Adjoins the Ohio River and State lines.

SURFACE GEOLOGY. —This county is unimportant from an oil and gas standpoint. The surficial rocks are Ordovician limestones.

BOURBON—No. 9.

LOCATION.—Central Kentucky.

SURFACE GEOLOGY.—Bourbon County is located in the Blue Grass section of the State, and is unimportant from an oil and gas standpoint. The surficial rocks are Ordivician limestones.

BOYD--No. 10.

LOCATION.—Northeastern Kentucky.

SURFACE GEOLOGY.—Coal measures.

PHYSIOGRAPHY.—Dissected table-land and river plain.

DRAINAGE.—Eastern fork of the Little Sandy River, and small tributaries of the Big Sandy River and of the Ohio River.

STRUCTURAL LOCATION.—Well down on the eastern flank of the Cincinnati anticline. As worked out by the coals there are a number of small structures in this county.

OIL AND GAS DEVELOPMENT.—Quite extensive oil and gas developments have been carried forward in this county. A number of old, oil and gas producing wells have been drilled in. There is very little, if any, new work going on in this county, at the present time.

BOYLE—No. 11.

LOCATION.—Central Kentucky.

SURFACE GEOLOGY.—Ordovician limestone, Devonian shales, Mississippian limestones and shales. The Silurian limestones are missing.

PHYSIOGRAPHY.—Dissected table-land, in the northern section; Knobs region in the southern-central part.

DRAINAGE.—Small tributaries to the Salt and Kentucky Rivers.

STRUCTURAL LOCATION.—Southern limb of the Lexington dome of the Cincinnati arch.

OIL AND GAS DEVELOPMENT.—A few wells have been drilled for oil and gas in Boyle County but no production has been secured. There is no prospecting going forward now and due to the very limited area covered by the black shale and higher formations it is doubtful if this county will ever produce commercial quantities of either oil or gas.

BRACKEN—No. 12.

LOCATION.—North-central Kentucky.

SURFACE GEOLOGY.—This county adjoins the Ohio River and is unimportant from an Oil and Gas standpoint due to the fact that the unproductive Ordovician Limestones are at the surface.

BREATHITT—No. 13.

LOCATION.—Central-eastern Kentucky.

SURFACE GEOLOGY.—Coal measures of the Pennsylvanian System.

PHYSIOGRAPHY.—Dissected northwestern sloping table lands.

DRAINAGE.—North and Middle Forks of the Kentucky River.

STRUCTURAL LOCATION.—Breathitt County is bisected by the eastern Kentucky geosyncline. It contains six oil and gas structures. These are anticlines and domes

of small dimension and have been named (1) Frozen Creek anticline, (2) Cope's Fork dome, (3) Quicksand Creek dome, (4) Leatherwood anticline, (5) Lost Creek dome, (6) Jackson anticline.

Oil and Gas Development.—This county has witnessed considerable oil and gas development within the last three years and a number of wells are now being drilled within its boundaries. Production of oil in small quantities has been proved on the Frozen Creek anticline, Copes Fork dome and Quicksand Creek dome. The greater portion of this county is yet unproved. A number of dry holes have been drilled.

Several million cubic feet of gas have been drilled in in Breathitt County, especially in the northern part.

NORTH-WESTERN KENTUCKY OIL AND GAS FIELDS.

The Meade (1) and Breckinridge (2) county fields produce gas and are old in development. The Ohio (3) county district produces oil.

BRECKINRIDGE—No. 14.

LOCATION.—Northwestern part of Kentucky, adjoining the Ohio River.

SURFACE GEOLOGY.—Principally Mississippian limestones, and a few outliers of the coal measures.

PHYSIOGRAPHY.—Northwest sloping river plain, in the northwestern part. Rolling hills due to dissection in southern part of the county.

DRAINAGE.—Sinking Creek and other tributaries of the Ohio and North Fork of the Rough River.

STRUCTURAL LOCATION.—This county is well down on the western limb of the Cincinnati arch. It contains one large and a few minor anticlines, which are found with difficulty, due to the heavy mantel of soil.

OIL AND GAS DEVELOPMENT.—A small gas field was developed around Cloverport, on the Ohio River, in 1889. Its production now is not very important. Some rather extended prospecting has been done without important results. The gas production was secured from the Warsaw of the Mississippian System. It was used for domestic consumption in Cloverport, Kentucky.

BULLITT—No. 15.

LOCATION.—North-central part of Kentucky.

SURFACE GEOLOGY.—The exposed rocks of Bullitt County in ascending order are Ordovician limestones, Silurian limestones, Devonian limestones and shales, and Mississippian limestones.

PHYSIOGRAPHY.—This county is bisected on a north and south line by a Knobs region. The western section is an elevated plain dipping northwestward to the Ohio River.

DRAINAGE.—North Fork and the Main Salt River.

STRUCTURAL LOCATION.—Western limb of the Lexington dome of the Cincinnati arch. This county contains a number of small anticlines which are under a good cover of the black shale and may be considered a good

location for oil and gas prospecting. There has been no important development in this county until the present time. Whether porous or sandy conditions in the limestones will be found is as yet unknown.

BUTLER—No. 16.

LOCATION.—Central-western Kentucky.

SURFACE GEOLOGY.—Mississippian limestone, and coal measures of the Pennsylvanian.

PHYSIOGRAPHY.—Generally a low, flat, very maturely dissected plain. Streams are broadly meandering with wide alluvium filled bottoms. The relief is from two hundred to three hundred feet.

DRAINAGE.—Green River and tributaries.

STRUCTURAL LOCATION.—Down toward central portion of the western coal basin.

OIL AND GAS DEVELOPMENT.—This county has been prospected at several points for oil and gas, but without any important results. It is, however, considered worth further and more scientific investigations.

CALDWELL—No. 16.

LOCATION—Western Kentucky.

SURFACE GEOLOGY.—This county, due to its location in the widely faulted portion of the western Kentucky, may be considered unimportant from a standpoint of oil and gas prospecting. The surficial rocks are the limes and sandy limes of the Mississippian, and the sandstones, shales, and coals of the Pennsylvanian.

CALLOWAY—No. 18.

LOCATION.—Western Kentucky, adjoining the Tennessee lime in the outheastern portion of the Jackson Purchase.

SURFACE GEOLOGY.—Quaternary sands and gravels in the western portion, with exposed Cretaceous and Mississippian sediments in the river and creek valleys of the eastern section. Very little is known about this county,

due to the fact that no drilling has been done here. There is no reason to disbelieve, however, that the producing horizons of Kentucky underlie the surface rocks. The thickness of all sediment in this section is very great. Deep drilling should be one of the primary considerations in prospecting in this section.

CAMPBELL—No. 19.

LOCATION.—North-central Kentucky.

SURFACE GEOLOGY.—This is a Blue Grass county, adjoining the Ohio River and may be considered unimportant from a standpoint of oil and gas prospecting The surficial rocks are Ordovician limestones.

CARLISLE—No. 20.

LOCATION.—In the extreme western part of the State, adjoining the Mississippi River.

OIL AND GAS DEVELOPMENT.—No prospecting of any record has been done in this county. Its oil and gas importance is for this reason unknown. Surface rocks are composed of quarternary sands, clays and gravels.

CARROLL—No. 21.

LOCATION.—North-central Kentucky, adjoining the Ohio River.

OIL AND GAS DEVELOPMENT.—This county is in the northern part of the Blue Grass section of the State. It is considered unimportant from an oil and gas standpoint, due to the fact that the surface rocks are the unproductive Ordovician limestones of central Kentucky.

CARTER—No. 22.

LOCATION.—Northeastern Kentucky.

SURFACE GEOLOGY.—Principally coal measures of the Pennsylvanian, with the underlying Mississippian limestones and shales, exposed along the river bottoms.

PHYSIOGRAPHY.—Northwest sloping table-land dissected in maturity.

DRAINAGE.—Tigert's Creek and Little Sandy River.

STRUCTURAL LOCATION.—On the east limb of the Lexington dome of the Cincinnati arch.

OIL AND GAS PRODUCTION.—Considerable prospecting for oil and gas has been done in this county and some little production has been secured. No pools of outstanding value have been proved.

CASEY—No. 23.

LOCATION.—Central Kentucky.

SURFACE GEOLOGY.—Principally Mississippian Limestones and shales, with Devonian shales exposed in river bottoms.

PHYSIOGRAPHY.—Deeply dissected table-lands.

DRAINAGE.—Green River and small tributaries of the Cumberland River on the east and Rolling Fork of the Salt River on the north.

STRUCTURAL LOCATION.—South flank of the Lexington dome of the Cincinnati arch. Position between the Lexington dome and Nashville dome.

OIL AND GAS DEVELOPMENT.—Some prospecting has been done in this county, but no pools of outstanding importance have been established.

CHRISTIAN—No. 24.

LOCATION.—West-southern Kentucky, adjoining the Tennessee line.

SURFACE GEOLOGY.—Mississippian limestones in the south and central sections and coal measures of the Pennsylvanian System in the extreme northern portion.

PHYSIOGRAPHY.—Undulating low table-lands.

DRAINAGE.—North and south forks of Sinking Creek of the Little River and tributaries of the Cumberland River, northern tributaries of the Trade Water River.

STRUCTURAL LOCATION.—Christian county is on the south limb of the western Kentucky coal basin or syncline.

Oil and Gas Development.—This county has been prospected to some extent, and production has been secured in very small quantity. No definite pools of importance have been brought in. Active development is now in progress.

Clark—No. 25.

Location.—Central Kentucky.

Surface Geology.—This is a Blue Grass county, for the most part, though the southeastern extremity extends into the Knobs Region. It has been prospected through the southeastern sections. Very little production has been obtained. No pools of outstanding importance have been proved in Clark County. Surficial rocks are the Ordovician, Silurian, and Devonian limestones and shales.

Clay—No. 26.

Location.—Southeastern Kentucky.

Surface Geology.—In coal measures of the Pennsylvanian System.

Physiography—Maturely dissected north west sloping table-land.

Drainage.—Goose Creek, Red River and other minor tributaries of the Kentucky River.

Structural Location.—This county is bisected by the eastern Kentucky geosyncline. Several small structures have been successfully prospected for both oil and gas.

Oil and Gas Development.—A number of vigorous drilling campaigns are now going forward in this county, but no large pools of importance have yet been proved. There is reason to believe, however, that both oil and gas will be found in this county in important commercial quantity.

CLINTON—No. 27.

LOCATION.—Southern Kentucky, adjoining the Tennessee line.

SURFACE GEOLOGY.—Ordovician limestone on Indian Creek in the northern section. In ascending order toward the south are Devonian shales, Mississippian limestones and shales, and outliers of the Pottsville conglomerate of the Pennsylvanian.

DRAINAGE.—Tributaries of the Cumberland River.

STRUCTURAL LOCATION.—This county is located low down on the northeastern dip of the Nashville dome of the Cincinnati arch.

OIL AND GAS DEVELOPMENT.—Though Clinton County adjoins the oil and gas pools of Wayne County, on the eastern part, no recent production of importance has been proved within its boundaries.

CRITTENDEN—No. 28.

LOCATION—Located in the greatly faulted lead, zinc, and fluorspar section of western Kentucky.

SURFACE GEOLOGY.—This county is considered of no importance, from the standpoint of oil and gas development. The surface rocks are principally the limestones of the Mississippian. Pennsylvanian sandstones, shales, and coals overlap the northeastern border. River alluvium of recent deposit blankets the northwestern border. There are a few isolated outlines of the coal measures scattered across the country.

CUMBERLAND—No. 29.

LOCATION.—Southern-central Kentucky, adjoining the Tennessee line.

SURFACE GEOLOGY.—In the bottoms of the Cumberland River, upper Ordovician limestone is exposed. The Devonian shale and Mississippian limestone are found in ascending order over the rest of the county.

PHYSIOGRAPHY.—The central portion of this county is a river plain which runs back to the steep sloping

hills and rolling country in the extreme north and southeastern portions of the county.

DRAINAGE.—Cumberland River and its tributaries.

STRUCTURAL LOCATION.—This county is located on the northeastern flank of the Nashville dome of the Cincinnati arch.

OIL AND GAS DEVELOPMENT.—There are within this county, a number of small anticlines of which the major axes cross the Cumberland River. These small structures may be seen on the cliffs on either side. This county is one of the oldest to produce oil and gas in the State. Oil was struck in 1828, in what is now called the Great American Well. This well is located near Burkesville, and was drilled by salt water prospectors. Since that time scattered production of considerable value has been developed in the various parts of this county especially those adjoining the Cumberland River. There is, at present, a growing interest looking toward the rejuvenation of these pools. Many of the old wells have been cleaned out, redrilled, and in some portions deeper drilling has been attempted. The oil of this county is very close to the lowest horizon in the State. Stratigraphically the county is the lowest extensively producing oil horizon in the world.

DAVIESS—No. 30.

LOCATION.—Northwestern part of the State, adjoining the Ohio River.

SURFACE GEOLOGY.—This county is located in the northern portion of the western coal field. It is synclinal for the most part and is not considered of importance for oil and gas prospecting. Daviess has had very little development and has no commercial production.

EDMONSON—No. 31.

LOCATION.—Central-western Kentucky.

SURFACE GEOLOGY.—Coal measures of the western coal fields in the northwest, Mississippian limestones in the southeastern part of the county.

PHYSIOGRAPHY.—Low rolling erosive hills in the Pottsville, in the northwest; gentle undulation in the southeast.

DRAINAGE.—Green and Nolin Rivers and their tributaries.

STRUCTURAL LOCATION.—On the western limb of the Cincinnati anticline, and on the eastern dip of the western coal basin.

OIL AND GAS DEVELOPMENT.—A number of wells have been drilled. Prospecting for oil and gas is now going forward with renewed energy. Small index production of importance has been secured. Asphalt deposits are found in this county. It seems probable that future prospecting will show that oil and gas pools of importance are located in Edmonson County.

ELLIOTT—No. 32.

LOCATION.--Northeastern Kentucky.

SURFACE GEOLOGY.—Elliott County is in the eastern coal field. Its surface rocks are in the Pottsville group, with the exception of Mississippian limestones, in the bottom of Big Sinking Creek in the northwest, and the intruded peridotite dikes in the central portion.

PHYSIOGRAPHY.—Dissected in maturity northwest sloping table-land.

DRAINAGE.—Little Sandy River and its tributaries.

STRUCTURAL LOCATION.—Intermediate position on the eastern limb of the Cincinnati anticline. There are pronounced minor structures and faults in this county.

OIL AND GAS DEVELOPMENT.—A number of wells have been drilled in this county, in testing for oil and gas. Several of the wells have produced gas in a large quantity, and a few, producing oil in small quantity, have been found.

ESTILL—No. 33.

LOCATION.—Central-eastern Kentucky.

SURFACE GEOLOGY.—The surficial rocks of this county are composed, in ascending order, of Ordovician and Silurian limestones and shales; Devonian limestones and shales, Mississippian limestones and shales, and outliers of the Pottsville conglomerate, which form the ridges.

PIPE LINE STATION, ESTILL COUNTY, KENTUCKY.

This station, which is located near Millers Creek, was constructed during the past year by the Cumberland Pipe Line Company to facilitate the handling of the crude oil production of this part of the field. Photo by W. R. Jillson, 1918.

PHYSIOGRAPHY.—Knobs, and a table-land, dissected in great maturity.

DRAINAGE.—Kentucky River and its tributaries.

STRUCTURAL LOCATION.—High up in the eastern flank of the Lexington dome of the Cincinnati arch.

OIL AND GAS DEVELOPMENT.—Estill County is one of the most important in Kentucky from an oil and gas standpoint. It first gave small productions lying along and above the outcrop line of the Devonian black shale. The first light green oil pools in this section of Ken-

tucky became known as Irvine, Ravenna and the Irvine Extension Pools. These pools opened the way for the drilling of the Ashley, Station Camp, Ross Creek, Big Sinking and associated pools to the East and South. There have probably been more wells drilled in Estill County than any other county in the State of Kentucky. There are at present a very large number of drillings and redrillings going on in this county. The Irvine pool, Station Camp, Ross Creek, and Millers Creek, which are the best known in this section of this State, are listed wherever Kentucky is recognized as an oil state. The Cumberland Pipe Line Company serves Estill County.

FAYETTE—No. 34.

LOCATION.—This is a central Blue Grass county, and as such is unimportant from an oil and gas standpoint. The surficial rocks are upper and lower Ordovician limestones which have been proved unproductive.

FLEMING—No. 35.

LOCATION.—Northeastern Kentucky.

SURFACE GEOLOGY.—The surface rocks of this county are principally Ordovician and Silurian limestones. Mississippian sediments in the east overlie a narrow strip of Devonian limestones and shales.

OIL AND GAS DEVELOPMENT.—Very little development work has been carried on in this county. No production of importance has been secured.

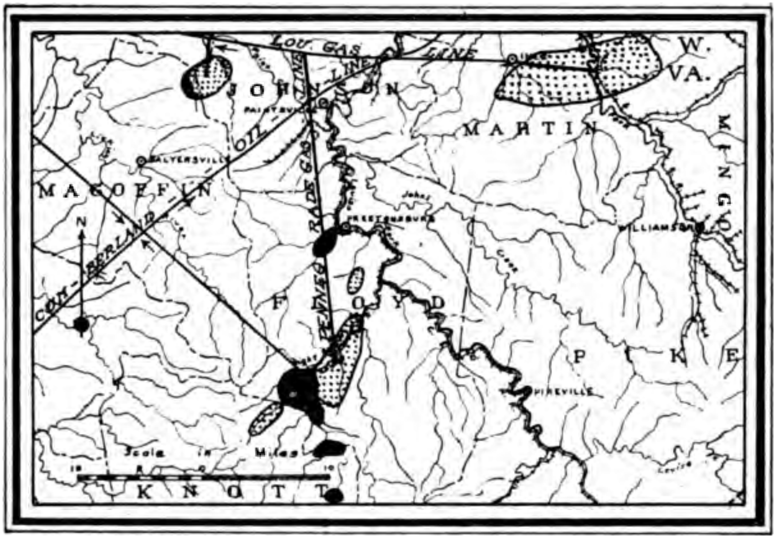
FLOYD—No. 36.

LOCATION.—Eastern Kentucky.

SURFACE GEOLOGY.—This county shows only coal, sandstones and shales of the Pottsville series.

PHYSIOGRAPHY.—North-westward sloping table-lands, dissected in maturity with relief of about six hundred feet.

DRAINAGE.—Big Sandy River and its tributaries, Johns, Beaver and Middle Creeks.



OIL AND GAS POOLS OF EASTERN KENTUCKY.

Sketch map showing the developed oil and gas fields of the eastern most part of the State. The counties showing no production are yet largely untested.

THE BEAVER CREEK OIL FIELD.

The view is at the mouth of Salt Lick Creek on Right Beaver Creek, Floyd County, Ky. Photo by A. M. Miller, 1902.

STRUCTURAL LOCATION.—Floyd County is located in the eastern geosyncline, which passes through it from the southern tip of Magoffin County, and on east through the northern part of Pike County. There are four pronounced minor structures in Floyd County. These are: the Beaver Creek anticline, the Bull Creek anticline, the Prestonsburg anticline, and the Mud Creek anticline. Synclinal oil is produced in the old Beaver Creek oil pool at Bosco on Right Beaver Creek. The initial production was drilled in on the Howard farm at Bosco in the year 1891. Oil has also been developed on Middle Creek, near Prestonsburg. Gas has been developed in large quantities on the Beaver Creek, and Bull Creek anticlines. It is proposed to commercialize this gas by the extension of a new eight-inch pipe line to the Louisville Gas and Pump Line in Johnson County.

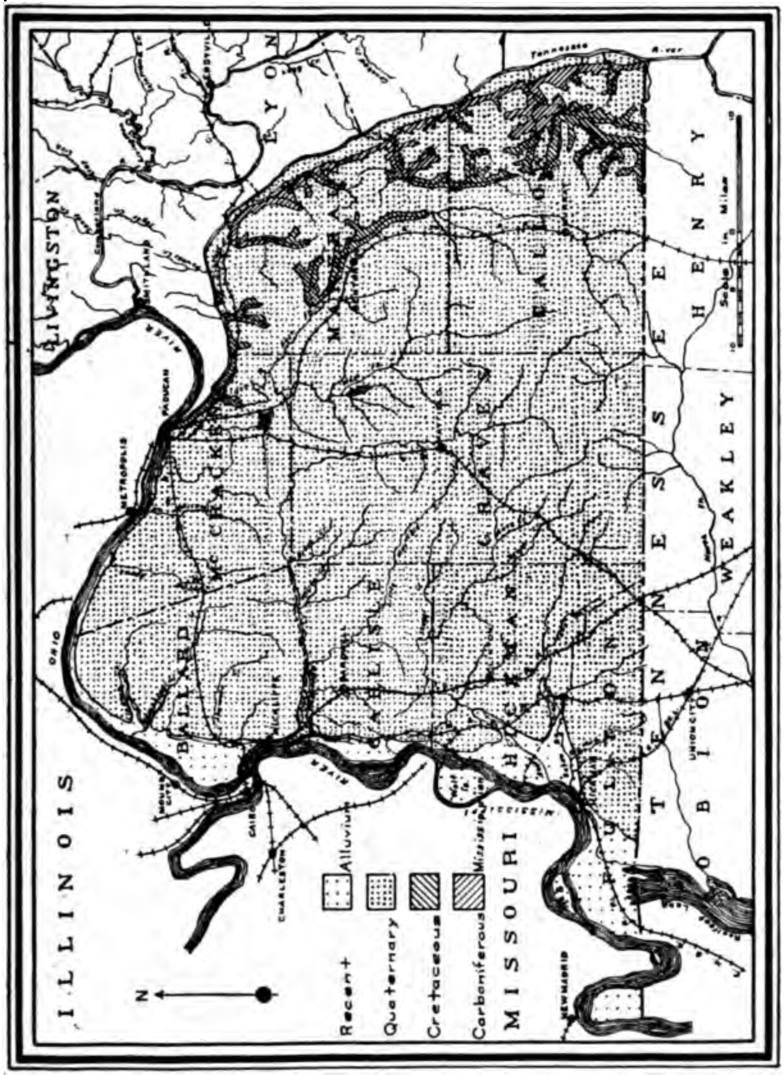
FRANKLIN—No. 37.

LOCATION.—This is a central Blue Grass county, and therefore is unimportant from the standpoint of oil and gas. A small amount of gas was secured in this county, in the Ordovician rocks near Frankfort, but the production was not found to be in commercial quantity. The surface rocks are the upper and lower Ordovician limestones which in this part of the State have been proved unproductive.

FULTON—No. 38.

LOCATION.—Extreme southwest section of the State of Kentucky in the Jackson Purchase, adjoining the Mississippi River.

OIL AND GAS DEVELOPMENT.—A heavy mantel of Cenozoic embayment deposits covers the entire surface of this county. Underlying it occur cretaceous and Mississippian limestones. No developments have been carried on in this county and therefore little is known concerning its oil and gas possibilities.



THE JACKSON PURCHASE REGION OF KENTUCKY.
The one region in the whole state that is practically yet untested. All of the known producing formations of Kentucky lower than the Pottsville are here deep below the surface.

Gallatin—No. 39.

Location.—Northern-central portion of the State. This is a Blue Grass county and is therefore considered of little importance for oil and gas prospecting. The surface rocks are the unproductive Ordovician limestones.

Garrard—No. 40.

Location.—This is a Central Blue Grass county and is unimportant from the standpoint of oil and gas. The surface rocks are the unproductive Ordovician limestones.

Grant—No. 41.

Location.—Central Blue Grass county, and therefore is unimportant from an oil and gas standpoint. The surface rocks are the unproductive Ordovician limestones.

Graves—No. 42.

Location.—Graves county lies in the Jackson Purchase, in the western part of Kentucky.

Surface Geology.—The surficial rocks are quaternary sands and gravels and clays.

Oil and Gas Development.—One well is being drilled in Graves County. The possibilities of oil and gas accumulation are very uncertain.

Grayson—No. 43.

Location.—Central-western Kentucky.

Surface Geology.—The areal geology of this county consists of Mississippian limestone, in the north and eastern sections of the county, with the Pottsville conglomerate in the south and western sections.

Physiography.—The surface is rugged, with rather high hills caused by dissection of the Pottsville.

Drainage.—The Nolin and Rough Rivers and their tributaries drain Grayson County.

"MAJOR SAND" OIL OF GRAYSON COUNTY.

Three storage tanks, filled with green oil from wells on the Major and Moffitt farms, Grayson County, Ky. The storage and the producing wells are the property of Carl K. Dresser. The Major and Moffitt farms are seven miles west of Leitchfield, Kentucky. Photo by W. R. Jillson.

STRUCTURAL LOCATION.—This county is located down on the west limb of the Cincinnati arch on the eastern edge of the western coal basin. The county is bisected on an east and west line by the Rough Creek Fault and anticline.

OIL AND GAS DEVELOPMENT.—Fifteen or twenty wells have been drilled in Grayson County. Some of these secured oil, some gas and some artesian water. Three or four were dry. The oil and gas production is fairly large and of commercial value. Considerable drilling is now in progress. The Leitchfield gas field, surrounding the town of the same name, is now producing about three million cubic feet of gas a day. About the same amount of gas has been developed at Meridith.

GREEN—No. 44.

LOCATION.—South-central Kentucky.

SURFACE GEOLOGY.—The surficial rocks are Mississippian limestone and shales.

PHYSIOGRAPHY.—Rolling to rugged.

DRAINAGE.—Green River and its tributaries.

STRUCTURAL LOCATION.—Western flank of the saddle of the Cincinnati arch.

OIL AND GAS DEVELOPMENT.—An active campaign of oil and gas drilling is now in progress and quite a number of wells have been drilled in Green County. Some of these are producing a little oil and considerable gas. There is one proved gas pool of commercial value in this county just northeast of Greensburg. Individual wells are estimated to give 1,000,000 cubic feet per day at the maximum flow.

GREENUP—No. 45.

LOCATION.—Northeastern Kentucky, adjoining the Ohio River.

SURFACE GEOLOGY.—The surface rocks of Greenup county are Mississippian limestones, and Pottsville coals, sandstones and shales.

DRAINAGE.—Little Sandy River, Tigerts Creek, and its tributaries.

STRUCTURAL LOCATION.—Greenup county occupies an intermediate position on the east flank of the Cincinnati arch.

OIL AND GAS DEVELOPMENT.—A considerable number of wells have been drilled. Some oil and gas has been secured, but to date, no wells of importance have been drilled.

HANCOCK—No. 46.

LOCATION.—Northwestern Kentucky.

SURFACE GEOLOGY.—The surficial rocks of this county are those of the Pottsville. The single exception to this inclusive statement is found in the Mississippian limestones which are exposed along a narrow strip on the eastern border.

OIL AND GAS DEVELOPMENT.—Although this county is close to the old Cloverport gas field, no important oil and gas developments have been made.

HARDIN—No. 47.

LOCATION.—Wetern-central Kentucky.

SURFACE GEOLOGY.—This county shows Mississippian limestones on the surface except in a very small section along the Salt River on the northeast boundary. Here Devonian and Silurian sediments outcrop.

OIL AND GAS DEVELOPMENT.—A number of oil wells have been drilled in this county but no production has been secured.

HARLAN—No. 48.

LOCATION.—Southeastern Kentucky.

OIL AND GAS DEVELOPMENT.—This county lies between Pine and Cumberland Mountains and therefore is unimportant from the standpoint of oil and gas prospecting.

HARRISON—No. 49.

LOCATION.—This is a Blue Grass county, and is therefore unimportant from the standpoint of oil and gas investigation. Ordovician limestones are at the surface.

HART—No. 50.

LOCATION.—Western-central Kentucky.

SURFACE GEOLOGY.—Surface rocks of this county are the Mississippian limestones, with a small extension of the Pottsville conglomerate, in the western portion of the county.

PHYSIOGRAPHY.—Surface of this county is rolling to rugged.

DRAINAGE.—Green and Nolin Rivers.

STRUCTURAL LOCATION.—On the west limb of the Cincinnati arch opposite the saddle. Several small structures exist in Hart County. One of them located north of Munfordville has been tested with a dry hole.

OIL AND GAS DEVELOPMENT.—This county contains a number of small folds, which have not been tested. To date no oil or gas discoveries of importance have been made.

Henderson—No. 51.

Location.—Northwestern Kentucky, adjoining the Ohio River.

Oil and Gas Development.—This county is in the lower portion of the western coal basin and to date has given no indications of oil and gas in commercial quantities.

Henry—No. 52.

Location.—This is a central Blue Grass county, and is therefore unimportant from an oil and gas standpoint. Ordovician limestones are the surface rocks.

Hickman—No. 53.

Location.—This county adjoins the Mississippi River, in the southwest portion of the Jackson Purchase.

Oil and Gas Development.—No development of any record has been carried forward in this county and its oil and gas possibilities are unknown.

Hopkins—No. 54.

Location.—Southwest portion of western Kentucky coal fields.

Oil and Gas Development.—This county adjoins the highly faulted section of western Kentucky. Although the oil and gas strata of eastern Kentucky are present here, it is not thought either of these hydrocarbons will be recovered in important commercial quantities.

Jackson—No. 55.

Location.—On the western edge of the eastern coal field, centrally located.

Surface Geology.—Principally, the Pottsville conglomerate of the Pennsylvanian. The upper Mississippian limestone and shales are exposed on the head of Indian Creek, Clover Bottom, Horse Creeks and also on the South Fork of Station Camp Creek.

PHYSIOGRAPHY.—Rugged to Rough. Dissected west edge of the coal measures.

DRAINAGE.—Middle and South Forks of the Rockcastle Rivers, and South Fork of Station Camp Creek of the Kentucky River.

STRUCTURAL LOCATION.—Middle position, east flank of the Cincinnati arch. There are a very few minor structures in this county. The county is principally a gentle monocline.

OIL AND GAS DEVELOPMENT.—A number of wells have been sunk at different points in this county, but production of commercial importance has not been secured except on the lower waters of Station Camp and Ross Creeks. These pools are really across the county line in Estill.

JEFFERSON—No. 56.

LOCATION.—Western part of Kentucky, adjoining the Blue Grass section, and Ohio River.

SURFACE GEOLOGY.—Ordovician limestones, Silurian limestones, Devonian limestones and shales, and Mississippian limestones, comprise the surface rocks of this county.

PHYSIOGRAPHY.—Undulation in the east due to dissection. Knobs in the western portion of the county.

DRAINAGE.—Floyds Creek and small tributaries of the Ohio River.

STRUCTURAL LOCATION.—High up on the western flank of the Lexington dome of the Cincinnati arch.

OIL AND GAS DEVELOPMENT.—Some little prospecting has been going forward in the southwestern portion of this county where a number of minor folds are known to exist. No production has been proved to date.

A BLUE GRASS DRILLING.

This well on the Wm. Hoover farm just south of Nicholasville in Jessamine County, had shown no oil or gas at 2,500 feet but drilling was continued. The rocks penetrated by the bit were Ordovician Limestones chiefly. The lower record has not been studied. Photo by W. R. Jillson, 1919.

JESSAMINE—No. 57.

LOCATION.—This county is located on the pinnacle area of the Lexington dome. Lower Ordovician limestones are exposed at the surface, and at Brooklyn Bridge over the Kentucky River the lowest stratigraphic sediments in the State of Kentucky are exposed. A well, now twenty-five hundred feet deep and still drilling, is located a quarter mile south of Nicholasville. This well has not shown oil or gas to date but has unlimited quantities of fresh water. Jessamine County is considered a typical example of the non-productive Blue Grass area of this State.

JOHNSON—No. 58.

LOCATION.—Eastern Kentucky.

SURFACE GEOLOGY.—Coal measures.

PHYSIOGRAPHY.—Plateau dissected in maturity.

DRAINAGE.—Paint Creek and other small tributaries of the Levisa Fork of the Big Sandy River.

STRUCTURAL LOCATION.—Johnson County is crossed by the Irvine-Paint Creek fault and fold on an east-west line through its central portion. The western extremity of this county is located on the well known Paint Creek uplift, which has a north and south trend. The Paint Creek dome, Laurel Creek dome, and Paint Creek anticline are the chief sub-structures of importance in the county.

OIL AND GAS DEVELOPMENT.—A large amount of development has gone forward in this county, but oil production has not been proved in large commercial quantity. However, many widely scattered small oil wells are to be found in Johnson County. Both the Paint Creek and Laurel Creek domes have developed gas in large quantities. This gas totaling altogether, at the present, about fifteen million cubic feet daily is going into the Central Kentucky Natural Gas Pipe Line, and the Louisville Gas and Electric Pipe Line. It is very probable that this county will, with farther prospecting, become an important oil producer.

KENTON—No. 59.

LOCATION.—This county is located in the northernmost section of the Blue Grass and is considered unfavorable for oil and gas development. The surface rocks are the unproductive Ordovician limestones.

KNOTT—No. 60.

LOCATION.—Southeastern Kentucky.

SURFACE GEOLOGY.—Coal measures.

PHYSIOGRAPHY.—Plateau dissected in maturity.

DRAINAGE.—Tributaries of the Levisa Fork of the Big Sandy River and North Fork of the Kentucky River.

STRUCTURAL LOCATION.—This county is located just south of the eastern Kentucky geosyncline on the flank of the Pine Mountain uplift. There are a number of small structures and domes in this county. The chief of these is the Yellow Mountain anticline, which starts in the easternmost tip of Breathitt County on the Spring Fork of Quick Sand Creek and rises to the southeast in Knott County until on the heads of Jones Fork of Right Beaver Creek it merges into the normal monoclinal slope to the northwest.

OIL AND GAS DEVELOPMENT.—Both oil and gas are secured in this county. Gas is now being produced from the sand inclusion in the Big Lime on the Yellow Mountain structure on Rock Fork. Oil is being produced on the monoclinal slope on Dry and Caney Creeks of Right Beaver Creek.

KNOX—No. 61.

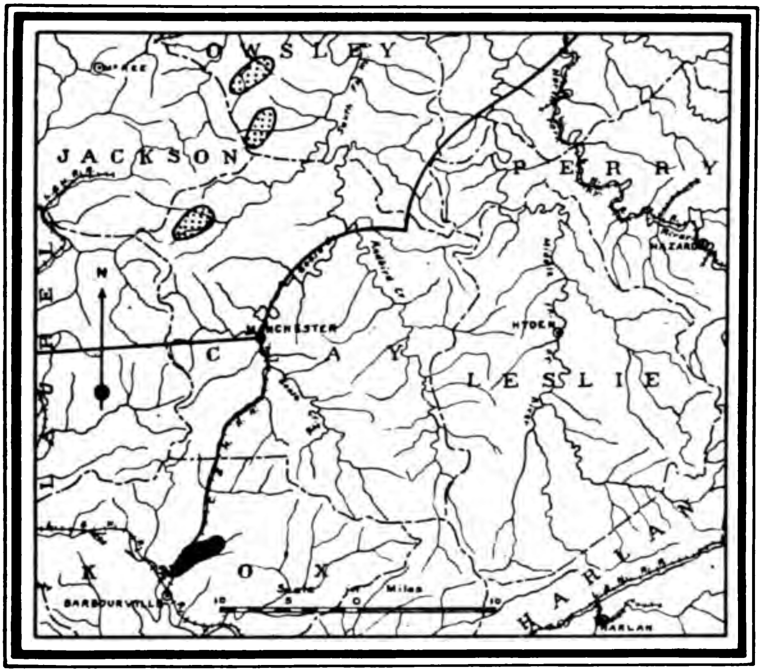
LOCATION.—Southeastern Kentucky.

SURFACE GEOLOGY.—Coal measures.

PHYSIOGRAPHY.—Plateau dissected in maturity.

DRAINAGE.—Cumberland River and its tributaries.

STRUCTURAL LOCATION.—Knox County is bisected by the eastern Kentucky geosyncline. There are a number of minor faults and folds in this county and they are always important oil and gas considerations. The folds begin to become more pronounced and are faulted as the Bell County line is approached.



OIL AND GAS OF SOUTH-EASTERN KENTUCKY.

This map shows the location of the gas fields of Clay and Owsley counties now being developed, and the older oil field north of Barbourville in Knox County.

OIL AND GAS DEVELOPMENT.—Knox County contains one of the oldest producing fields in the state of Kentucky. A large number of small producing wells are located on Little Richmond and Indian Creeks. Three sands produce in the Pottsville conglomerate. These are the Wages, Jones and Epperson. Very little drilling has been done below the Pottsville and the productivity of the underlying formations is practically unknown. Deep drilling is not advised for this section.

LARUE—No. 62.

LOCATION.—Central Kentucky.

SURFACE GEOLOGY.—Devonian limestones and shales, and Mississippian limestones cover the entire county with the exception of the small areas of the Silurian which are found in the bottom of Rolling Fork.

PHYSIOGRAPHY.—Knob section in the northeast, high rolling in the central and western portions of the county.

DRAINAGE.—Rolling Fork of the Salt River.

STRUCTURAL LOCATION.—Southwestern flank of the Lexington dome of the Cincinnati arch. A minor anticlinal structure bisects this county near Hodgenville. It is probably a continuation of the structure at Leitchfield in Grayson County.

OIL AND GAS DEVELOPMENT.—Some little prospecting is going forward in this county, but to date no production of commercial importance has been proved.

LAUREL—No. 63.

LOCATION.—Southeastern Kentucky.

SURFACE GEOLOGY.—Coal measures.

PHYSIOGRAPHY.—Northwest sloping plateau dissected in maturity.

DRAINAGE.—Laurel and Rockcastle Rivers and their tributaries.

STRUCTURAL LOCATION.—Low down on the eastern flank of the Cincinnati arch.

OIL AND GAS DEVELOPMENT.—Some little prospecting is going forward in Laurel County but oil and gas in commercial quantities have not been obtained.

A CHARACTERISTIC VIEW IN BIG SINKING.
View on the George Booth farm in Lee County, Kentucky. This property is being operated by the Quaker Oil Co. Photo by W. R. Jillson, March, 1919.

Lawrence—No. 64.

Location.—Northeastern Kentucky.

Surface Geology.—Coal measures.

Physiography.—Plateau dissected in maturity.

Drainage.—Levisa and Tug Forks of the Big Sandy River. Dry Fork of the Little Sandy River.

Structural Location.—Principally, synclinal to the east of the Paint Creek uplift and to the north of the Paint Creek-Warfield anticlines. These structures are approached in Lawrence county by strong monoclinal folds on which occur many minor productive structures.

Oil and Gas Development.—Four oil and gas pools of established reputation are found in Lawrence County; they are the Fallsburg, Busseyville, George's Creek, and Laurel Creek pools, the last, a pool of recent development which overlaps into Johnson County. Production is secured from the Wier and Berea sands of the Mississippian System. Oil production of this county is served by the Cumberland Pipe Line.

Lee—No. 65.

Location.—Eastern Kentucky.

Surface Geology.—Coal measures, except in the Kentucky River bottoms, and the northwestern section which shows Mississippian limestones.

Physiography.—Plateau dissected in maturity and rugged to rough.

Drainage.—Kentucky River and its tributaries.

Structural Location.—High on the eastern flank of the Lexington dome of the Cincinnati arch. This county contains many small anticlines and domes.

Oil and Gas Development.—Lee County contains the Big Sinking oil pool which is the largest and best known oil pool in the state of Kentucky. It also contains a number of other small pools. The oil production is

THE HELPING HAND OF NATURE

In a poor farming country Mother Nature frequently makes adjustment. Besides carving out this rock barn on Big Sinking Creek in Lee County, she provided immense oil wealth under the surface.

served by the Cumberland Pipe Line, and Kentucky River Towing Company. The Indian Pipe Line Company, several small local refineries, and the Standard Oil Refining Company of Louisville, Kentucky, are served by short lines or by tank cars. Production is secured from the Onondaga (Corniferous) limestone and in some wells from the underlying Niagara limestone.

LESLIE—No. 66.

LOCATION.—Southeastern Kentucky.

SURFACE GEOLOGY.—This county is on the northeastern flank of the Pine Mountain uplift in the eastern coal field.

OIL AND GAS DEVELOPMENT.—Very little prospecting is going on in this county, and no production of importance has been secured.

LETCHER—No. 67.

LOCATION.—This county is bisected by the Pine Mountain fault, and is therefore unfavorable to oil and gas prospecting.

LEWIS—No. 68.

LOCATION.—Northeastern Kentucky, adjoining the Ohio River.

SURFACE GEOLOGY.—Principally, Mississippian limestones, with a small exposed area of the underlying Devonian and Silurian sediments.

PHYSIOGRAPHY.—Plateau dissected in maturity.

DRAINAGE.—Kinniconick and Salt Creeks of the Ohio River.

STRUCTURAL LOCATION.—Middle position of the eastern flank of the Cincinnati anticline.

OIL AND GAS DEVELOPMENT.—A considerable number of wells have been drilled in Lewis County. They produce from five to ten barrels of crude oil. No production of outstanding importance is on record.

LINCOLN—No. 69.

LOCATION.—Central Kentucky.

SURFACE GEOLOGY.—Ordovician limestones, Silurian limestones, Devonian limestones and shales, Mississippian limestones.

PHYSIOGRAPHY.—Rolling to rough.

DRAINAGE.—Tributaries of the Dix and Green Rivers, and Buck and Pine Lick Creeks of the Cumberland River.

STRUCTURAL LOCATION.—On the south nose of the Lexington dome of the Cincinnati arch.

LINCOLN COUNTY OIL POOLS.

Oil and Gas Development.—This county contains two oil and gas pools of commercial importance, one on Buck Creek and the other on Green River. Both of these are small pools with a steady production. A pipe line connects the Buck Creek pool at King's Mountain to tank car station on the Q. & C. Railroad. Considerable development is going forward in this county, principally, in the southern section of the county, where thick covering is assured for the Onondaga limestone.

Livingston—No. 70.

Location.—This county is located in the faulted section of the western part of Kentucky, adjoining the Ohio River, and is therefore unimportant from a standpoint of oil and gas prospecting. Recent river alluviums, Pennsylvanian outlyers, and Mississippian limestones are the surface rocks.

Logan—No. 71.

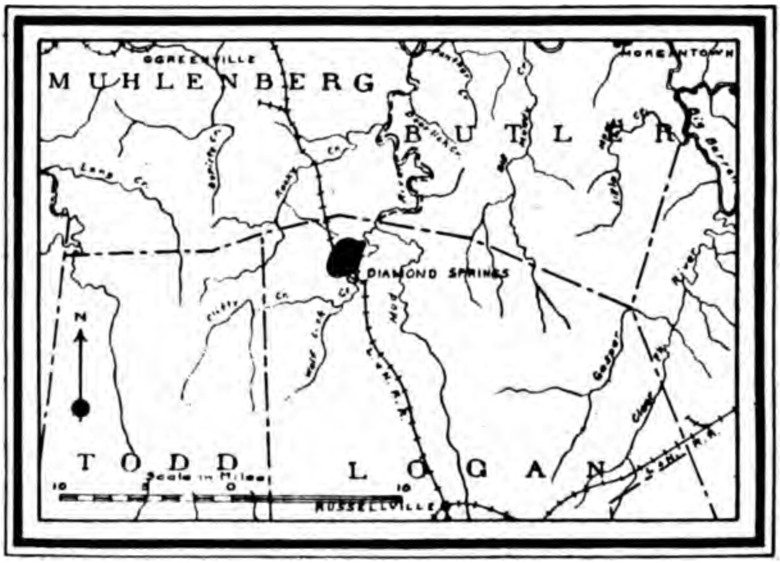
Location.—Southwestern Kentucky, adjoining the Tennessee line.

Surface Geology.—Mississippian limestones in the south-central section; coal measures in the northwestern corner.

PHYSIOGRAPHY.—Rolling, except in the northwestern section where topography becomes rugged, due to the coal measures.

DRAINAGE.—Tributaries of the Green and Cumberland Rivers.

STRUCTURAL LOCATION.—South limb of the western coal basin. A small anticline may be seen at Epley Station.



THE DIAMOND SPRINGS GAS FIELD.

OIL AND GAS DEVELOPMENT.—The Diamond Springs gas pool is located in the northwestern section of this county, close to the Muhlenberg line. Production is secured on a strong monoclinal dip to the north. There is considerable development going on in this county, but no oil wells of commercial importance have been secured.

LYON—No. 72.

LOCATION.—This county is located in the southwestern part of Kentucky, in the faulted section, and is therefore considered unfavorable to oil and gas prospecting. Mississippian limestones are the surficial rocks.

MADISON—No. 73.

LOCATION.—This county is principally a Blue Grass section, located in the central portion of the State.

SURFACE GEOLOGY.—The southeastern portion of the county is in the knobs section, where the producing oil sand of this part of Kentucky is found at shallow depth. No production, however, of striking importance has been found. Ordovician, Silurian, Devonian, Mississippian, and Pennsylvanian sediments outcrop.

MAGOFFIN—No. 74.

LOCATION.—Eastern Kentucky.

SURFACE GEOLOGY.—Coal measures.

PHYSIOGRAPHY.—Dissected northwest sloping plateau.

DRAINAGE.—Licking River.

STRUCTURAL LOCATION.—Magoffin county is crossed in its northern extremity by the Irvine-Paint Creek fault and fold, and on the northwestern boundary by the Paint Creek uplift. It contains a number of small structures, important from the standpoint of oil and gas prospecting. Its southern extremity is crossed by the eastern Kentucky geosyncline. The important sub-structures are: The Paint Creek dome, Rockhouse anticline, White Oak anticline, Johnson Fork anticline and Ivyton dome.

OIL AND GAS DEVELOPMENT.—A considerable amount of oil and gas development has gone forward in Magoffin County. Production is proved on the Paint Creek dome, the White Oak anticline and the Ivyton dome. The producing sands are the Pottsville of the Pennsylvanian System, Wier of the Mississippian System and the Onondaga (Corniferous) of the Devonian. Recent developments point to the conclusion that the Wier sand will be a very important producer of oil in this county.

MARION—No. 75.

LOCATION.—This is essentially a Blue Grass county. It offers but a very small area, except in its southernmost section, favorable to oil and gas prospecting. Ordo-

vician, Silurian, Devonian, and Mississippian limestones and shales are the rocks found at the surface.

OIL AND GAS DEVELOPMENT.—Very little prospecting has been done in this county.

MARSHALL—NO. 76.

LOCATION.—Marshall County is located in the Tennessee River bend section of the Jackson Purchase. Quaternary, cretaceous, and Mississippian sediments outcrop.

OIL AND GAS DEVELOPMENT.—Its oil and gas possibilities are unknown, due to lack of development.

MARTIN—NO. 77.

LOCATION.—Easternmost Kentucky.

SURFACE GEOLOGY.—Coal measures.

PHYSIOGRAPHY.—Plateau dissected in maturity.

DRAINAGE.—Tug Fork of the Big Sandy River.

STRUCTURAL LOCATION.—Bisected by the Warfield anticline on an east-west line.

OIL AND GAS DEVELOPMENT.—The outstanding proved gas pool of importance is the Inez or Martin County gas field, which occupies a crestal position on the Warfield anticline. Gas is secured from the Big Lime and Big Injun sands. A number of small oil wells have been drilled in this county, principally in connection with gas prospecting. No separate oil pools of importance have been established to date.

MASON—NO. 78.

LOCATION.—This is a Blue Grass county, and is, therefore, unimportant from an oil and gas standpoint. Ordovician limestones are the principal surficial rocks.

MCCRACKEN—NO. 79.

LOCATION.—This county adjoins the Ohio River in the northern part of the Jackson Purchase in the western

part of Kentucky Quaternary and cretaceous sediments are found at the surface.

OIL AND GAS DEVELOPMENT.—Very little oil and gas development has gone forward in this county.

MCCREARY—No. 80.

LOCATION.—Southern Kentucky, adjoining the Tennessee line.

SURFACE GEOLOGY.—Coal measures in the upland; Mississippian limestones in the river bottoms.

PHYSIOGRAPHY.—Plateau dissected in maturity.

DRAINAGE.—South Fork of the Cumberland River.

STRUCTURAL LOCATION.—Just northwest of the eastern Kentucky geosyncline.

OIL AND GAS DEVELOPMENT.—McCreary County is the seat of the first oil well in the state of Kentucky. The well was struck on South Fork of the Cumberland River in 1819 by Martin Beatty, of Abingdon, Virginia, while he was drilling for salt water. This county was then a part of Wayne County. Since then oil has been developed in McCreary County at various points. A group of small and rather unimportant pools, which have been on the pump for everal years, are found on the South Fork. This is an extension of the Wayne County oil district. For farther details see Wayne County.

MCLEAN—No. 81.

LOCATION.—Center of the western Kentucky coal fields.

SURFACE GEOLOGY.—Coal measures.

PHYSIOGRAPHY.—River plain low, undulating.

DRAINAGE.—Green River and its tributaries.

STRUCTURAL LOCATION.—McLean County is bisected by the Rough Creek fault and fold. Its central portion is an area of local uplift. Its northern and southern extremities dip from the central section.

Oil and Gas Development.—Some little prospecting has been carried forward in this county, but no wells of commercial importance have been developed. Structure exists in this county as well as a sequence of oil bearing sands and it is possible, with farther development, that oil may be found in commercially paying quantities.

Meade—No. 82.

Location.—Northwestern Kentucky, adjoining the Ohio River.

Surface Geology.—Mississippian limestones and shales.

Physiography.—Rolling and river plain.

Drainage.—Unimportant tributaries of the Ohio River.

Structural Location.—Western flank of the Lexington dome of the Cincinnati arch.

Oil and Gas Development.—Meade County is the seat of the Rock Haven gas field which was developed a number of years ago. It is at present unimportant. Gas production was secured in a sand inclusion in the black shale. Very little propecting is going forward in this county at the present time.

Menifee—No. 83.

Location.—Northeastern Kentucky.

Surface Geology.—Pottsville conglomerate, St. Genevieve and St. Louis limestones.

Physiography.—Plateau dissected in maturity.

Drainage.—Tributaries of the Kentucky River.

Structural Location.—High up on the eastern flank of the Lexington dome of the Cincinnati arch, this county contains a number of minor folds. The Menifee gas field is located on an essentially monoclinal structure.

OIL AND GAS DEVELOPMENT.—Menifee County contains the Menifee gas field which lies in the western portion of the county and overlaps into Powell County in the southern section. This field was developed in 1901, the field gas coming from the porous strata in the Onondaga. This field has been extensively drilled and gas production at the present is decreasing in importance. It is used by the Central Kentucky Natural Gas Company as a reservoir supply field for the cities of Mt. Sterling, Winchester, Lexington, Versailles, Midway and Frankfort. Menifee County has been widely prospected and oil production of considerable importance has been secured. There are still possibilities of new pools in Menifee County. Drilling is to the depth of six and eight hundred feet.

MERCER—No. 84.

LOCATION.—This is a Blue Grass county, located high on the Lexington dome of the Cincinnati arch, and may be considered as unimportant from the standpoint of oil and gas prospecting. Ordovician limestones, proved unproductive in this part of the State, are the surface rocks.

METCALFE—No. 85.

LOCATION.—Southern-central Kentucky.

SURFACE GEOLOGY.—Mississippian limestones and shales.

PHYSIOGRAPHY.—Gently rolling, the southern section very rugged.

DRAINAGE.—Little Barren River. On the north are found the head waters of the Big Barren River, and in the southeastern section, Marrowbone Creek of the Cumberland River.

STRUCTURAL LOCATION.—Saddle of the Cincinnati arch, between the Lexington and the Nashville domes. Metcalfe County has several small structures. There is one with a doming center near Beaumont. Well defined dips are found to the south, east and west. The dip to the north is not so definite.

OIL AND GAS DEVELOPMENT.—One deep dry hole has been drilled in this county about two miles west of Beaumont. At Sulphur Wells, there are some small wells in which light amber oil has been found in the Waverly shale. Considerable development work is being carried on in this county. It is possible that commercial oil production will be found in this county if porous or sandy limestones can be located.

MONROE—No. 86.

LOCATION.—Southern Kentucky, adjoining the Tennessee line.

SURFACE GEOLOGY.—Principally, Mississippian limestones, with Devonian and Ordovician sediments in the Cumberland River in the southeastern portion of the county. No Silurian is found in Monroe County. It is also important to note that the Onondaga (Corniferous) limestone does not underlie the Devonian black shale in this county.

PHYSIOGRAPHY.—Rolling to rugged.

DRAINAGE.—Head water tributaries of the Big Barren River and small eastern tributaries of the Cumberland River.

STRUCTURAL LOCATION.—On the northern flank of the Nashville dome of the Cincinnati arch.

OIL AND GAS DEVELOPMENT.—Very little oil and gas prospecting has gone forward in this county, due principally to the fact that the Onondaga is absent under the greater portion of the county and that the section is somewhat isolated. In all probability the Silurian is also absent under the surface of the entire county with the exception of the western portion. The Ordovician limestones are present under Monroe County, and in all probability oil and gas will be secured in quantity at a later date in this county. A number of small structures are known to exist in this county. Recently two good oil wells were brought in west of Tompkinsville.

MONTGOMERY—NO. 87.

LOCATION.—Central-eastern Kentucky.

SURFACE GEOLOGY.—This county is practically in the Blue Grass section of the state. Its southeastern extremity overlaps into the Knobs region, where considerable prospecting is going forward and a few successful wells have been drilled. No wells of marked commercial importance, however, have been secured. The surficial rocks are Ordovician, Silurian, Devonian, Mississippian, and Pennsylvanian sediments.

MORGAN—NO. 88.

LOCATION.—Eastern Kentucky.

SURFACE GEOLOGY.—Coal measures.

PHYSIOGRAPHY.—Northwestward sloping plateau dissected in maturity.

DRAINAGE.—Licking River and its tributaries.

STRUCTURAL LOCATION.—Middle position on the eastern flank of the Lexington dome of the Cincinnati arch. This county is crossed in the southern extremity by the Irvine-Paint Creek fault and fold. There are, besides, a number of small structures in the north central portion of the county.

OIL AND GAS DEVELOPMENT.—Morgan County contains the one-time famous Cannel City oil pool, which was drilled in with gusher production from a few wells in 1912. Some of these wells showed flush production which reached seven hundred barrels. This field produced its maximum of twelve thousand barrels of crude oil per month in 1913. Production came from the Onondaga limestone, and was held in the porous strata on the anticline. Near West Liberty, the county seat of Morgan County, considerable gas has been found and much prospecting is going forward now within the boundaries of this county.

Muhlenberg—No. 89.

Location.—This county is located in the southern-central section of western Kentucky coal field.

Surface Geology.—Coal measures except in southwest corner where the underlying Mississippian limestones are exposed.

Physiography.—Hilly in the north, rolling in the south.

Drainage.—Green River and its tributaries.

Structural Location.—Muhlenberg County is bisected by the southwestern Kentucky geosyncline.

Oil and Gas Development.—Producing sands of the Pennsylvanian and Mississippian Systems are present here, but medium deep drilling will be required. There are no oil and gas pools of importance in this county.

Nelson—No. 90.

Location.—Nelson County is essentially a Blue Grass county. The southern portion, however, extends into the Knobs section. Ordovician, Silurian, Devonian, and Mississippian limestones and shales are found at the surface.

Oil and Gas Development.—It is doubtful if large amounts of oil and gas will ever be found in this county. The southern portion of the county exhibits a fair covering of Mississippian limestones and the black shale. Some little development has gone forward in this county. A number of test wells have been drilled in near New Hope without much success.

Nicholas—No. 91.

Location.—This is a Blue Grass county, located in the northeastern portion of the state, on the Licking River. It may be considered unimportant from an oil and gas standpoint. Ordovician limestones are at the surface.

OHIO—No. 92.

LOCATION.—Eastern portion of the western coal field.

SURFACE GEOLOGY.—Coal Measures except in the central section where the Rough Creek fault brings up the Mississippian limestones.

PHYSIOGRAPHY.—Rolling and rugged.

DRAINAGE.—Green River and its tributaries.

STRUCTURAL GEOLOGY.—Ohio County is dissected by the Rough Creek fault and fold, the northern and southern extremities of the county dropping down to the northwest and to the southwest Kentucky geosynclines.

OIL AND GAS DEVELOPMENT.—An oil pool of considerable importance has been developed on the south flank of the Rough Creek anticline at a point between Sulphur Springs and Hartford. This is known as the Hartford oil pool. The producing sand is in the Waverly. With the Rough Creek anticline crossing this county and the producing sands of Kentucky present, Ohio County can be said to be a good prospecting county from an oil and gas standpoint.

OLDHAM—No. 93.

LOCATION.—This is essentially a Blue Grass county, with a fringe of Devonian and Silurian outliers on its western boundaries.

OIL AND GAS DEVELOPMENT.—Although some gas was developed just southwest of LaGrange a number of years ago the prospects of securing either oil or gas in commercial quantity in this county are not considered good. Drilling should be discouraged.

OWEN—No. 94.

LOCATION.—Owen County is located in the north-central part of the Blue Grass section of the state.

SURFACE GEOLOGY.—The surficial rocks of this county are Ordovician limestones which are faulted to a degree that alone precludes the accumulation of oil and gas.

OIL AND GAS DEVELOPMENT.—Little development work has been done in Owen County and no oil or gas has been secured. This county's possibilities of oil and gas are considered very poor.

OWSLEY—No. 95.

LOCATION.—Western part of the eastern coal field.

SURFACE GEOLOGY.—Coal measures.

PHYSIOGRAPHY.—Plateau dissected in maturity.

DRAINAGE.—South Fork of the Kentucky River.

STRUCTURAL LOCATION.—Low down on the eastern flank of the Cincinnati arch. This county contains a number of small structures, the most important being in the northwestern section of the county near Travelers Rest.

OIL AND GAS DEVELOPMENT.—Considerable oil and gas development has gone forward in this county. Gas in considerable quantity has been secured on a definite structure near Traveler's Rest. Only a small amount of oil has been recovered. It is possible before this season is over a few small oil wells will be reported.

PENDLETON—No. 96.

LOCATION.—Pendleton County is located in the northern part of Blue Grass section and is therefore unimportant from an oil and gas standpoint. Ordovician limestones are found at the surface.

PERRY—No. 97.

LOCATION.—Center of the eastern coal fields.

SURFACE GEOLOGY.—Coal Measures.

PHYSIOGRAPHY. — Dissected northwestward sloping plateau.

DRAINAGE.—North Fork of the Kentucky River.

STRUCTURAL LOCATION.—Perry County is located on the southeastern flank of eastern Kentucky's geosyncline which crosses the county in its northwestern extremity.

OIL AND GAS DEVELOPMENT.—A number of wells have been drilled in this county, but no oil or gas of commercial importance has been secured. The county has large productive possibilities and vast areas still untested.

PIKE—No. 98.

LOCATION.—Easternmost county in Kentucky.

SURFACE GEOLOGY.—Principally, coal measures, with Devonian and Mississippian sediments outcropping along the Pine Mountain fault in the southwestern section of the county.

NORTHERN FLANK OF PINE MOUNTAIN ANTICLINE.

View from the crest of the Pine Mountain Anticline down the Russell Fork of the Levisa Fork (Pennsylvanian) of the Big Sandy River, from Virginia into Pike County, Kentucky. Shows northwest limb of the fold and 1,000 feet of the Lee formation. Photo by W. R. Jillson, April 5, 1919.

PHYSIOGRAPHY.—High northwestward sloping plateau dissected in maturity.

DRAINAGE.—Levisa, Tug, and Russell Forks of the Big Sandy River, and their tributaries.

STRUCTURAL LOCATION.—Pike County is on the southeastern flank of the eastern Kentucky geosyncline which crosses it in the northern extremity. A number of small structures exist in Pike County. Chief among them is the D'Invillier anticline, which rises between the head waters of the Shelby and Marrowbone Creeks and extends crescentrically to the northeast, then crosses the Russell and Levisa Forks of the Big Sandy River and progresses toward Williamson in Mingo County, West Virginia. The Williamson fold is probably a continuation of the D'Invillier structure. The Pine Mountain fault and fold crosses the southern edge of Pike County.

OIL AND GAS DEVELOPMENT.—A number of wells have been drilled in Pike County into the Pottsville. Some of these have shown gas in considerable quantity, but this gas is not now being commercialized. In the northern part of the county a number of wells have reached the Devonian but oil in paying quantities has not been found. The Pottsville is about one thousand feet thick below drainage and contains the Beaver, Horton and Pike sands, all of which may be looked upon as paying sands if accompanied by favorable structure. The sand inclusion in the Big Lime of the Mississippian System is a gas producer. Due to the extreme thickness of the upper Paleozoic sediments in this section, the Onondaga, the producing horizon of the Irvine field, would not be encountered here, except at a very deep depth. The Big Injun and Wier sands will probably develop gas and oil production respectively.

POWELL—No. 99.

LOCATION.—Western portion of the eastern coal field.

SURFACE GEOLOGY.—Limited outcrops of the Ordovician limestones in the extreme northwestern section of the county. To the southeast, the Silurian limestones, Devonian limestones and shales, Mississippian limestones, and the Pennsylvanian conglomerate appear.

OHIO—No. 92.

LOCATION.—Eastern portion of the western coal field.

SURFACE GEOLOGY.—Coal Measures except in the central section where the Rough Creek fault brings up the Mississippian limestones.

PHYSIOGRAPHY.—Rolling and rugged.

DRAINAGE.—Green River and its tributaries.

STRUCTURAL GEOLOGY.—Ohio County is dissected by the Rough Creek fault and fold, the northern and southern extremities of the county dropping down to the northwest and to the southwest Kentucky geosynclines.

OIL AND GAS DEVELOPMENT.—An oil pool of considerable importance has been developed on the south flank of the Rough Creek anticline at a point between Sulphur Springs and Hartford. This is known as the Hartford oil pool. The producing sand is in the Waverly. With the Rough Creek anticline crossing this county and the producing sands of Kentucky present, Ohio County can be said to be a good prospecting county from an oil and gas standpoint.

OLDHAM—No. 93.

LOCATION.—This is essentially a Blue Grass county, with a fringe of Devonian and Silurian outliers on its western boundaries.

OIL AND GAS DEVELOPMENT.—Although some gas was developed just southwest of LaGrange a number of years ago the prospects of securing either oil or gas in commercial quantity in this county are not considered good. Drilling should be discouraged.

OWEN—No. 94.

LOCATION.—Owen County is located in the north-central part of the Blue Grass section of the state.

SURFACE GEOLOGY.—The surficial rocks of this county are Ordovician limestones which are faulted to a degree that alone precludes the accumulation of oil and gas.

OIL AND GAS DEVELOPMENT.—Little development work has been done in Owen County and no oil or gas has been secured. This county's possibilities of oil and gas are considered very poor.

OWSLEY—No. 95.

LOCATION.—Western part of the eastern coal field.

SURFACE GEOLOGY.—Coal measures.

PHYSIOGRAPHY.—Plateau dissected in maturity.

DRAINAGE.—South Fork of the Kentucky River.

STRUCTURAL LOCATION.—Low down on the eastern flank of the Cincinnati arch. This county contains a number of small structures, the most important being in the northwestern section of the county near Travelers Rest.

OIL AND GAS DEVELOPMENT.—Considerable oil and gas development has gone forward in this county. Gas in considerable quantity has been secured on a definite structure near Traveler's Rest. Only a small amount of oil has been recovered. It is possible before this season is over a few small oil wells will be reported.

PENDLETON—No. 96.

LOCATION.—Pendleton County is located in the northern part of Blue Grass section and is therefore unimportant from an oil and gas standpoint. Ordovician limestones are found at the surface.

PERRY—No. 97.

LOCATION.—Center of the eastern coal fields.

SURFACE GEOLOGY.—Coal Measures.

PHYSIOGRAPHY. — Dissected northwestward sloping plateau.

DRAINAGE.—North Fork of the Kentucky River.

STRUCTURAL LOCATION.—Perry County is located on the southeastern flank of eastern Kentucky's geosyncline which crosses the county in its northwestern extremity.

OIL AND GAS DEVELOPMENT.—A number of wells have been drilled in this county, but no oil or gas of commercial importance has been secured. The county has large productive possibilities and vast areas still untested.

PIKE—No. 98.

LOCATION.—Easternmost county in Kentucky.

SURFACE GEOLOGY.—Principally, coal measures, with Devonian and Mississippian sediments outcropping along the Pine Mountain fault in the southwestern section of the county.

NORTHERN FLANK OF PINE MOUNTAIN ANTICLINE.

View from the crest of the Pine Mountain Anticline down the Russell Fork of the Levisa Fork (Pennsylvanian) of the Big Sandy River, from Virginia into Pike County, Kentucky. Shows northwest limb of the fold and 1,000 feet of the Lee formation. Photo by W. R. Jillson, April 5, 1919.

PHYSIOGRAPHY.—High northwestward sloping plateau dissected in maturity.

DRAINAGE.—Levisa, Tug, and Russell Forks of the Big Sandy River, and their tributaries.

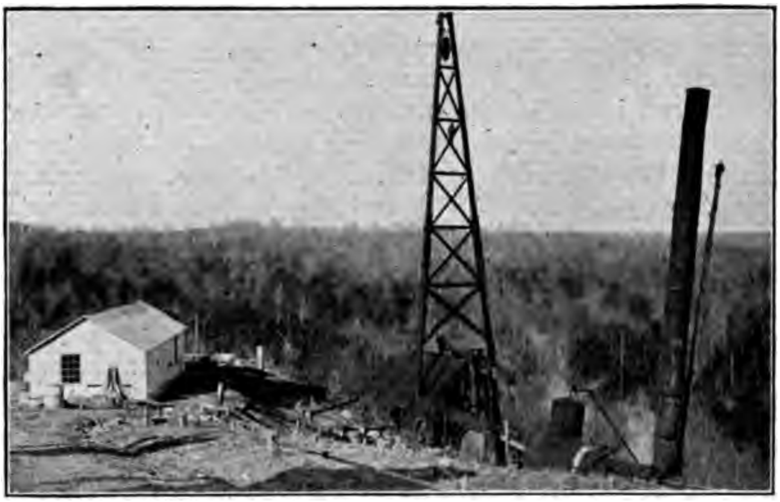
STRUCTURAL LOCATION.—Pike County is on the southeastern flank of the eastern Kentucky geosyncline which crosses it in the northern extremity. A number of small structures exist in Pike County. Chief among them is the D'Invillier anticline, which rises between the head waters of the Shelby and Marrowbone Creeks and extends crescentrically to the northeast, then crosses the Russell and Levisa Forks of the Big Sandy River and progresses toward Williamson in Mingo County, West Virginia. The Williamson fold is probably a continuation of the D'Invillier structure. The Pine Mountain fault and fold crosses the southern edge of Pike County.

OIL AND GAS DEVELOPMENT.—A number of wells have been drilled in Pike County into the Pottsville. Some of these have shown gas in considerable quantity, but this gas is not now being commercialized. In the northern part of the county a number of wells have reached the Devonian but oil in paying quantities has not been found. The Pottsville is about one thousand feet thick below drainage and contains the Beaver, Horton and Pike sands, all of which may be looked upon as paying sands if accompanied by favorable structure. The sand inclusion in the Big Lime of the Mississippian System is a gas producer. Due to the extreme thickness of the upper Paleozoic sediments in this section, the Onondaga, the producing horizon of the Irvine field, would not be encountered here, except at a very deep depth. The Big Injun and Wier sands will probably develop gas and oil production respectively.

POWELL—No. 99.

LOCATION.—Western portion of the eastern coal field.

SURFACE GEOLOGY.—Limited outcrops of the Ordovician limestones in the extreme northwestern section of the county. To the southeast, the Silurian limestones, Devonian limestones and shales, Mississippian limestones, and the Pennsylvanian conglomerate appear.



AN EVEN SKY-LINE OF POTTSVILLE CONGLOMERATE.

View on the Mary Adams farm in Powell County, adjoining the northern boundary of Lee County. The drilling is done under topographic difficulties. There are about thirty wells on the lease. Photo by W. R. Jillson, April, 1919.

PHYSIOGRAPHY.—Knob section, rough topography.

DRAINAGE.—Red River, a fork of the Kentucky River.

STRUCTURAL LOCATION.—Middle position on the eastern flank of the Lexington dome of the Cincinnati arch. The southern extremity of Powell County is crossed by the Irvine-Paint Creek fault and fold. There are also several small structures in this county.

OIL AND GAS DEVELOPMENT.—Powell County contains a number of oil pools. Among them are the Ashley pool, one of the most important in the Irvine section. Flush production was secured in a number of gusher wells from porous strata in the Onondaga limestone on a fold along the Irvine-Paint Creek fault. The northern potion of Powell County contains the southern extremity of Menifee gas field. A great deal of drilling has been done in this county.

Pulaski—No. 100.

Location—South-central Kentucky.

Surface Geology.—Coal measures in the eastern, and Mississippian limestones in the central and western portions of the county. About five miles west of Somerset the sequence of Ordovician sediments is exposed in and near Fishing Creek.

Drainage.—Cumberland River and its tributaries.

Structural Location.—East saddle position between the Lexington and Nashville domes on the Cincinnati arch.

Oil and Gas Development.—A number of wells have been drilled in this county, and oil and gas have been secured, but to date oil and gas in commercial quantity have not been secured. Somerset, the county seat, through which passes the Cumberland Pipe Line, gives its name to practically all of the eastern Kentucky oil which is designated as "Somerset Grade." The only eastern Kentucky production, excluded from the Somerset grade, is the low gravity crude of the Ragland pool of Bath, Rowan and Menifee Counties.

Robertson—No. 101.

Location.—Robertson County is located in the northeastern part of the state, in the Blue Grass area of the State. It is, therefore, unimportant from an oil and gas standpoint. Ordovician limestones are the surface rocks.

Rockcastle—No. 102.

Location.—Central Kentucky.

Surface Geology.—Principally, coal measures and Mississippian limestones with small inliers of the Devonian black shale.

Physiography.—Very rugged, due to widespread dissection of the erosion-resisting Pottsville conglomerate.

Drainage.—Rockcastle River and its tributaries.

Structural Location.—Well up on the southeast flank of the Lexington dome of the Cincinnati anticline.

Oil and Gas Development.—Rockcastle County has had considerable oil and gas development but to date no oil or gas pool of commercial importance has been developed within its boundaries.

Rowan—No. 103.

Location.—Northeastern Kentucky.

Surface Geology.—Silurian, Devonian, Mississippian and Pennsylvanian limestones and shales. The Pottsville conglomerate overlaps into the southeastern section of this county.

Physiography.—Rolling to rough.

Drainage.—North Fork of the Licking River and its tributaries.

Structural Location.—Middle high position on the Lexington dome of the Cincinnati anticline.

Oil and Gas Development.—A considerable number of wells have been drilled in Rowan County. The oil pool of outstanding importance within the county is the Ragland which crosses the Licking River in the southern part of the county.

Russell—No. 104.

Location.—Central-southern Kentucky.

Surface Geology.—This county is located in the saddle between the Lexington and the Nashville domes on the Cincinnati arch. It is doubtful if any Onondaga or Niagaran limestones under lie the surface of the county except in a very small portion.

Oil and Gas Development.—Only a little drilling has been done in this county; a few small structures are found, and the county's possibilities of oil and gas are undetermined for this reason. Pay sands might be secured in the Ordovician limestones beneath the black shale but the prospects are not very good.

SCOTT—No. 105.

LOCATION.—This county is located in the heart of the Blue Grass section of Kentucky, and is considered undesirable for oil and gas testing. Ordovician limestones are the surficial rocks.

SHELBY—No. 106.

LOCATION.—Shelby County is located in the western portion of the Blue Grass.

SURFACE GEOLOGY.—The surficial rocks are Ordovician limestones.

OIL AND GAS DEVELOPMENT.—The prospects for oil and gas in this county are considered of very doubtful importance.

SIMPSON—No. 107.

LOCATION.—Southern Kentucky, adjoining the Tennessee line.

SURFACE GEOLOGY.—Mississippian limestones.

PHYSIOGRAPHY.—Rolling.

DRAINAGE—Tributaries of Drake's Creek of Big Barren River.

STRUCTURAL LOCATION.—This county lies in a medial position on the north flank of the Nashville dome of the Cincinnati anticline. A number of small anticlines occur in this county.

OIL AND GAS DEVELOPMENT.—Within the last few years considerable prospecting has been done for both oil and gas in this county, and both have been secured though not in large quantity. Due to the rapid northwestern dip of the Onondaga and Silurian limestones Simpson County may be looked upon as an important prospecting county. Its structural location is equally as good as that of Barren and Warren Counties. To date, however, no considerable area of porous or sandy limestone has been located.

SPENCER—No. 108.

LOCATION.—This is a Blue Grass county.

SURFACE GEOLOGY.—The surficial rocks are Ordovician limestones.

OIL AND GAS DEVELOPMENT.—Spencer County is considered of very little importance from an oil and gas standpoint.

TAYLOR—No. 109.

LOCATION.—Central Kentucky.

SURFACE GEOLOGY.—Principally, Mississippian limestones with exception of a small area of Devonian shale in the creek bottoms, in the eastern section of the county.

PHYSIOGRAPHY.—Rolling.

DRAINAGE.—Tributaries of the Green River.

STRUCTURAL LOCATION.—Taylor County lies on the saddle between the Lexington and Nashville domes of the Cincinnati arch. A westward plunging anticline may be found just north of Saloma.

OIL AND GAS DEVELOPMENT.—A number of wells have been drilled in this county and some production secured, but to date no oil or gas pools of first rank have been proved in this county. Several dry holes have been drilled in Taylor but these may not be taken to condemn this area. Open, porous, or sandy limestones do not seem to be widely distributed in this county.

TODD—No. 110.

LOCATION.—Southwestern Kentucky.

SURFACE GEOLOGY.—Mississippian limestones in the southwestern section of the county. Coal measures in the northern section.

PHYSIOGRAPHY.—Rolling in the south-central section and rugged in the north.

DRAINAGE.—North flank and tributaries of the Green River, and southern tributaries of the Cumberland River.

STRUCTURAL LOCATION.—Middle position on the north flank of the Nashville dome of the Cincinnati anticline.

OIL AND GAS DEVELOPMENT.—Very little oil and gas development has gone forward in this county, and its possibilities as an oil and gas producing county are very uncertain.

TRIGG—No. 111.

LOCATION.—This county is located in the Mississippian limestone section, in southwestern Kentucky, adjoining the Tennessee line.

SURFACE GEOLOGY.—Trigg County is partly within the greatly faulted section of western Kentucky and its potentialities of oil and gas are not considered very good.

TRIMBLE—No. 112.

LOCATION.—This is essentially a Blue Grass county. Located in the northwestern part of Kentucky adjoining the Ohio River.

SURFACE GEOLOGY.—The surficial rocks are Ordovician limestones with a few outliners of the Silurian. The possibilities of oil and gas are considered very poor.

UNION—No. 113.

LOCATION.—Western edge of the western coal fields of Kentucky.

SURFACE GEOLOGY.—Principally, coal measures with river deposits along the Ohio River.

PHYSIOGRAPHY.—Rolling to rough.

DRAINAGE.—Highland Creek and the tributaries of the Ohio River.

STRUCTURAL LOCATION.—Union county is bisected by the Rough Creek fault and fold.

OIL AND GAS DEVELOPMENT.—A number of wells have been drilled in this county, but oil or gas in important commercial quantities has not been secured. Several small oil wells of doubtful value are located in this county. A little prospecting is going forward.

WARREN—No. 114.

LOCATION.—Southern Kentucky.

SURFACE GEOLOGY.—Principally, Mississippian limestones with a few outliers of the coal measures in the northwestern section of the county.

PHYSIOGRAPHY.—Rolling to rugged in the central and southwestern sections, and very hilly in the northwestern portion.

DRAINAGE.—Big Barren River and its tributaries including Drake's Creek.

SHOOTING BOHON NO. 1, WARREN COUNTY, KY.
Photo by W. R. Jillson, 1919.

STRUCTURAL LOCATION.—Warren County lies on the northern flank of the Nashville dome of the Cincinnati anticline. There is a constant northwestward normal dip throughout this county. A number of small structures are to be seen throughout the county. One of the most pronounced of these is located just to the northwest of Bowling Green, Kentucky.

OIL AND GAS DEVELOPMENT.—A great many wells have been drilled in the southeastern portion of Warren County. The present tendency in this section of the State is from Barren and Allen Counties into Warren County. A great many wells are being drilled and the zenith of the field development of this county is still distant. Several pools of outstanding importance have been devoloped in the county. The chief among them is the Moulder pool in the eastern section of the county, adjoining Barren and Allen Counties on the Barren River. The Onondaga limestone, the producer of the Allen County field is known to be productive in this county. There are some indications that this horizon thickens towards the northwest. Within a short distance of Drake's postoffice, in the southeastern section of this county, oil has been found at a depth of one hundred and fifteen feet below the surface in a stray sand of the Mississippian, at Fort Payne. The oil is of a rather high gravity, and has a greenish-amber color. The striking of this small well establishes proved sands at shallow depth in the Mississippian, and gives added attraction to wild-cat drilling in the county. Considerable production has been developed near Green Hill in the southeastern section of the county.

WASHINGTON—No. 115.

LOCATION.—Washington County is located in the Blue Grass section of Kentucky. It is considered unimportant for oil and gas prospecting. The surficial rocks are Ordovician limestones with a few outliers of the Silurian limestones.

WAYNE—No. 116.

LOCATION.—Central-southern Kentucky, adjoining the Tennessee line.

STRUCTURAL LOCATION.—Whitley County is bisected by the eastern Kentucky geosyncline.

OIL AND GAS DEVELOPMENT.—A number of wells have been drilled in Whitley County but to date no production of commercial importance has been secured.

WOLFE—No. 119.

LOCATION.—Eastern Kentucky.

SURFACE GEOLOGY.—Principally, coal measures with Mississippian limestones in the creek bottoms in the extreme northwestern portion of the county.

PHYSIOGRAPHY.—Plateau dissected in maturity.

DRAINAGE.—North Fork and other tributaries of the Kentucky River.

VIEW AT TORRENT, WOLFE COUNTY, KY.
Photo by O. Wolf, 1918.

STRUCTURAL LOCATION.—Wolfe County is bisected by the Irvine-Paint Creek fault and fold. The county has a position well down on the eastern flank of the Lexington dome of the Cincinnati anticline. A number of small structures radiate from and parallel the Irvine-Paint Creek fault and fold.

OIL AND GAS DEVELOPMENT.—Wolfe County is one of the established oil and gas producing counties of the state of Kentucky. It has within its boundaries a number of very important wells. These are found in an extension of the Irvine pool just west of Torrent, the old Campton pool, and the Hazel Green pool. A large percentage of the drilling in this county has been successful, but all of the oil and gas producing areas are not yet thoroughly known. Some areas on structure, however, have proved barren. There are indications that new pools of commercial importance will still be discovered within the boundaries of this county. The Onondaga limestone, which contains oil in commercial quantities, is the producing "sand" in this county.

WOODFORD—No. 120.

LOCATION.—Woodford is the Central Blue Grass county of the State of Kentucky, and is considered unimportant for oil and gas testing. Unproductive upper and lower Ordovician limestones form the surface strata. Prospecting for oil and gas in this county is discouraged.

CHAPTER VIII.

RECORDS OF DRILLED WELLS.

Herewith are presented the records of 752 wells drilled in Kentucky. This number represents only a small portion of the total number of oil and gas wells actually drilled. A very great many wells have been drilled on which no complete records were kept. This is especially true in the larger fields such as the Estill, Lee, Allen and Wayne County pools, where the drillers and operators were only interested in the actual depth of the producing sand below the surface. In other cases, where records were kept, the owners exhibiting selfish motives have objected to publication. Enough records are given, however, to faithfully represent nearly all parts of the State in which drilling has been done and to show the character of the material drilled through, and the relative positions of the oil and gas sands.

In these records the position of the black shale (designated Devonian) is given wherever possible. This is simply intended as a guide to the driller. It is not always the case that only that which is so marked represents and delimits the Devonian in that particular section. In some of the records a portion of what is called "Black Shale" by the driller really belongs in the Mississippian System while in a great many of them, some of the formations below the black shale are also Devonian.

The thickness of coal seams given in these records cannot be considered as reliable for mining index purposes. In some cases the thickness is obviously too great and in others what is called coal may only be black shale. A few interesting records of wells drilled just outside the State lines have been added. Practically all of the records here given have been edited by the author and divisions made according to the various geologic systems, e. g., Pennsylvanian, Mississippian, Devonian, Silurian, Ordovician, etc. This has been done to help in an understanding of the subsurface stratigraphy of each county.

ALLEN COUNTY.

LOG No. 1.

J. H. CARTER FARM

Northeast of Adolphus.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Unrecorded, 152.		
DEVONIAN SYSTEM.		
Top of Black Shale (Devonian)	0	152
Base of Black Shale (Devonian)	43	195
Sulphur water	1	196
Oil sand (lime?)	4	200
Lime	21	221
Sand (lime?)	4	225
Blue clay	28	253
Sand (lime?)	4	257
Slate	14	271
Lime	552	823
Sand (?)	76	899

LOG No. 2.

WIDOW LANE FARM

Near Tennessee Line.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	5	5
Lime	65	70
Sand	20	90
Blue lime	40	130
Slate	5	135
Sand	10	145
Slate	5	150
DEVONIAN SYSTEM.		
Black Shale	55	205
Gray lime	30	235
Oil-sand (lime?)	10	245
Blue lime	20	265
White lime	3	268

Well was dry.

LOG No. 3.

KEEN WELL NO. 7—RODEMER POOL.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime and Shale	120	120
DEVONIAN SYSTEM.		
Black Shale	43	163
Blue lime	11	174
Brown sand (lime?)	3	177
Light lime	6	183
Brown sand (lime?) Pay sand	9	192
Hard lime	2	194
Light blue lime	9	203
Dark lime	2	205
Gray lime	1	206
Dark lime	6	212
Blue lime	10	222
Light blue lime	3	225

LOG No. 4.

ROSA HOLDER FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	28	28
White lime	158	186
DEVONIAN SYSTEM.		
Black Shale (Devonian)	41	227
Lime—Gas show at 245—Water at 320	98	325

LOG No. 5.

SETTLES WELL—No. 3.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Casing	81	81
Limestone	119	200
Green shale	3	203
DEVONIAN SYSTEM.		
Black shale	45	248
Dark lime (oil smell)	5	253
Hard lime	10	263
Brown oil-sand (lime?) Gas	13	276
Oil show at		276
Shaly lime	14	290
Dark brown sand (lime?) Oil show	5	295
Hard blue lime	6	301
Sandy lime—Oil show	2	303
Hard blue and shaly lime	20	328
Hard sand (?)	1	329
Salt water	5	334

LOG No. 6.

OCALA OIL CO.—No. 4.
Frost Farm, 3 miles South of Scottsville.

Strata		Depth
MISSISSIPPIAN SYSTEM.		
Unrecorded, 210.		
DEVONIAN SYSTEM.		
Top of black shale at	(Devonian)	210
Base of black shale at	(Devonian)	257
First oil show at		271
Oil at		282
Bottom of well at		287

LOG No. 7.

OCALA OIL CO.—No. 5.

Strata		Depth
MISSISSIPPIAN SYSTEM.		
Unrecorded, 223.		
DEVONIAN SYSTEM.		
Top of black shale at	(Devonian)	223
Base of black shale at	(Devonian)	269
First pay at		294
Salt water at		308

LOG No. 8

OCALA OIL CO.—No. 6.

Strata		Depth
MISSISSIPPIAN SYSTEM.		
Unrecorded, 209.		
DEVONIAN SYSTEM.		
Top of black shale at	(Devonian)	209
Base of black shale at	(Devonian)	256
Oil and water at		283
Oil at		298

LOG No. 9.

ROY GILLIAM FARM—GAS CREEK,
East of Adolphus.

Strata		Depth
MISSISSIPPIAN SYSTEM.		
Unrecorded, 69.		
DEVONIAN SYSTEM.		
Top of black shale at	(Devonian)	69
Base of black shale at	(Devonian)	102
Oil and water at		103
Water to		159

LOG No. 10.

WALKER WELL.—No. 1.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	127	127
DEVONIAN SYSTEM.		
Black Shale	50	177
Cap rock	4	181
Dark gray, sandy lime	20	201
Brown lime—Oil show	12	213
Sandy shale	12	225
Lime and brown sand—Oil smell	8	233
Dark muddy shale	12	245
Dark sandy shale	8	253
Dark muddy shale	17	270
White water sand (lime?) fresh water	2	272

LOG No. 11.

RUSH WELL.—No. 1.
Western edge of Allen County.
(Partial record).

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Shale	45	45
Hard lime	40	85
Sand—Oil show	59	144
DEVONIAN SYSTEM.		
Black Shale	116	200
Cap rock	8	268
Dry sand (lime?)		
Lime		
Dry sand (lime?)		
Bluish-green shale		to 405

LOG No. 12.

WELL ON BIG TRAMMEL CREEK,
Five miles southwest of Scottsville.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	12	12
Blue limestone	90	102

DEVONIAN SYSTEM.		
Black Shale	13	115
Black rock—Oil at 127	12	127
Blue limestone	40	167
White sand (lime?)	20	187
Black rock—Gas at 193	6	193
Soft sand rock (lime?)	10	203
Yellow flinty sand (lime?) salt water	2	205
"Trenton" rock*	600	805
Blue limestone	200	1005
"Trenton" (light)	85	1090

*"Trenton" is driller's distinction.

LOG No. 13.

WELL AT PETROLEUM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	10	10
Blue limestone	30	40
DEVONIAN SYSTEM.		
Black Shale	9	49
Light gray sandstone (lime?) Oil at 132	83	132

LOG No. 14.

GAINESVILLE OOL.

J. R. JOHNSON No. 1.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	7	7
Limestone	184	191
DEVONIAN SYSTEM.		
Black shale	47	238
Blue limestone	6	244
Lime sand	36	280

LOG No. 15.

J. R. JOHNSON No. 2.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	5	5
Limestone	177	182
DEVONIAN SYSTEM.		
Black shale	45	227
Blue limestone	7	234
Lime sand	1	235

LOG No. 16.

J. R. JOHNSON No. 3.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	6	6
Limestone	166	172
DEVONIAN SYSTEM.		
Black shale—Devonian	49	221
Blue limestone	71	292
Lime sand	4	296
Limestone	14	310

LOG No. 17.

J. R. JOHNSON No. 4.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	6	6
Limestone	166	172
DEVONIAN SYSTEM.		
Black shale	42	214
Blue limestone	5	219
Lime sand	28	247
Limestone	7	254

LOG No. 18.

J. R. JOHNSON No. 5.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	4	4
Limestone	234	243
DEVONIAN SYSTEM.		
Black shale	44	287
Blue limestone	5	292
Lime sand	60	352
Black limestone	94	446

LOG No. 19.

J. R. JOHNSON No. 7.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	8	8
Limestone	234	242
DEVONIAN SYSTEM.		
Black shale	46	288
Blue limestone	5	293
Lime sand	83	376

LOG No. 20.

J. R. JOHNSON No. 8.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	18	18
Limestone	254	272
DEVONIAN SYSTEM.		
Black shale	46	318
Blue limestone	6	324
Lime sand	57	381
Black limestone	70	451

LOG No. 21.

J. R. JOHNSON No. 9.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	6	6
Limestone	265	271
DEVONIAN SYSTEM.		
Black shale	46	317
Blue limestone	5	322
Lime sand	13	335
Black limestone	75	410

LOG No. 22.

J. R. JOHNSON No. 10.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	18	18
Limestone	268	286
DEVONIAN SYSTEM.		
Black shale	44	330
Blue limestone	5	335
Lime sand	15	350
Black limestone	50	400

LOG No. 23.

ANDY SMITH No. 2.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	274	274
DEVONIAN SYSTEM.		
Black shale	46	320
Blue limestone	19	339
Lime sand	30	369
Limestone	6	375

LOG No. 24.

ANDY SMITH No. 3.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	276	276
DEVONIAN SYSTEM.		
Black shale	50	326
Blue limestone	23	349
Blue limestone	12	361
Lime sand	31	392
Limestone	4	396

LOG No. 25.

SCOTTSVILLE OIL POOL,
OCALA OIL CO. No. 4.
Frost Farm, 3 Miles S. of Scottsville.

Strata		Depth
MISSISSIPPIAN SYSTEM.		
Unrecorded, 210.		
DEVONIAN SYSTEM.		
Top of black shale at	(Devonian)	210
Base of black shale at		257
First oil show at		271
Oil		282
Bottom of well at		278

LOG No. 26.

OCALA OIL CO. No. 5.

Strata		Depth
MISSISSIPPIAN SYSTEM.		
Unrecorded, 223.		
DEVONIAN SYSTEM.		
Top of black shale at	(Devonian)	223
Base of black shale at		269
First pay at		294
Salt water at		308

LOG No. 27.

OCALA OIL CO. No. 6.

Strata		Depth
MISSISSIPPIAN SYSTEM.		
Unrecorded, 209.		
DEVONIAN SYSTEM.		
Top of black shale at	(Devonian)	209
Base of black shale at		256
Oil and water at		283
Oil at		298

LOG No. 28. RODEMER POOL,
KEEN WELL No. 7.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime and shale	120	120
DEVONIAN SYSTEM.		
Black shale	43	163
Blue lime	11	174
Brown sand (lime?)	3	177
Light lime	6	183
Brown sand (lime?) Pay sand	9	192
Hard lime	2	194
Light blue lime	9	203
Dark lime	2	205
Gray lime	1	206
Dark lime	6	212
Blue lime	10	222
Light-blue lime	3	225

LOG No. 29. ROSA HOLDER FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	28	28
White lime	158	186
DEVONIAN SYSTEM.		
Black shale	41	227
Lime-Gas show at 245. Water at 320	98	325

LOG No. 30. SETTLES WELL No. 3.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Casing	81	81
Limestone	119	200
Green shale	3	203
DEVONIAN SYSTEM.		
Black shale	45	248
Dark lime (Oil smell)	5	253
Hard lime	10	263
Brown oil-sand (lime?) Gas	13	276
Oil show at		276
Shaly lime	14	290
Dark brown sand (lime?) Oil show	5	295
Hard blue lime	6	301
Sand lime—Oil show	7	308
Hard blue and shaly lime	20	328
Hard sand (?)	1	329
Salt water	5	334

LOG No. 31.

TRAMMEL CREEK POOL,
WELL ON BIG TRAMMEL CREEK.
Five Miles Southwest of Scottsville.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	12	12
Blue limestone	90	102
DEVONIAN SYSTEM.		
Black shale	13	115
Black rock—Oil at 127	12	127
Blue lmestone	40	167
White sand (lime?)	20	187
Black rock—Gas at 193	6	193
Soft sand rock (lime?)	10	203
Yellow flinty sand (lime?) Salt water	2	205
"Trenton" rock*	600	805
Blue limestone	200	1,005
"Trenton" (light)	85	1,090

*"Trenton" is driller's distinction.

LOG No. 32.

PETROLEUM POOL,
WELL AT PETROLEUM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	10	10
Blue limestone	30	40
DEVONIAN SYSTEM.		
Black shale	9	49
Light gray sandstone (lime?) Oil at 132	83	132

LOG No. 33.

ADOLPHUS POOL,
J. H. CARTER FARM, NORTHEAST OF ADOLPHUS.

Strata				Depth
DEVONIAN SYSTEM.				
Top of black shale (Devonian)	at			152
Base of black shale (Devonian)	at			195
Sulphur water	at			196
Oil sand (lime?)	at			200
Lime	at			221
Sand (lime?)	at			225
Blue clay	at			253
Sand (lime?)	at			257
Slate	at			271
Lime	at	281	to	823
Sand (?)	at	823	to	899

LOG No. 34.

WIDOW LANE FARM, NEAR TENNESSEE LINE.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	5	5
Lime	65	70
Sand	20	90
Blue lime	40	130
Slate	5	135
Sand	10	145
Slate	5	150
DEVONIAN SYSTEM.		
Black shale	55	205
Gray lime	30	235
Oil-sand (lime?)	10	245
Blue lime	20	265
White lime	3	268

Well was dry.

LOG No. 35.

VARIOUS LOCATIONS.
GEORGE JEWELL WELL.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil and limestone	193	193
DEVONIAN SYSTEM.		
Black shale	50	243
Blue limestone	7	250
Lime sand	28	278
Broken limestone	14	292
Lime sand	4	296

LOG No. 36.

WOOD JEWELL WELL.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil and limestone	188	188
DEVONIAN SYSTEM.		
Black shale	50	238
Blue limestone	2	240
Lime sand	10	250

LOG No. 37.

T. Y. OLIVER WELL No. 1.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	37	37
Limestone	274	311
DEVONIAN SYSTEM.		
Black shale	43	354
Lime sand	65	419
1st sand 5ft.		
2nd sand 10 ft.		
3rd sand 14 ft.		

LOG No. 38.

B. T. WILLIAMS WELL.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	30	30
Limestone	272	302
DEVONIAN SYSTEM.		
Black shale	48	350
Lime sand	98	448
Slate	54	502

LOG No. 39.

L. W. NICHOLS WELL No. 1.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	13	13
Limestone	250	263
DEVONIAN SYSTEM.		
Black shale	57	320
Blue limestone	5	325
First sand	5	330
Blue limestone	12	342
Second sand	20	362
Limestone	20	382

LOG No. 40.

JOHNSON FARM No. 1.
Near Clifton School.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	7	7
Gray lime	68	75
"Gas sand"	5	80
Lime	111	191

DEVONIAN SYSTEM.		
Shale	47	238
Cap rock	8	246
"Oil sand"	2	248

LOG No. 41.

SAM WHEAT FARM,
West of Trammel Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	8	8
White lime	40	48
Blue lime	2	50
DEVONIAN SYSTEM.		
Black shale	45	95
Cap rock	5	100
"Oil sand"	12	112
Blue lime	48	160
Broken sand (?)	15	175
Blue shale	25	200

In Allen county the majority of the wells get production in the Onondaga or Niagara limestone a few feet below the Black Shale of the Devonian System.

There are, however, two deeper "pays" and chances for oil are not exhausted unless drilling is carried to a depth of from 125 to 150 feet below the shale. Deeper drilling than this should be discouraged.

BARREN COUNTY.

LOG No. 42.

MARTHA DOUGHERTY FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	9	9
Lime shells	10	19
Sand	6	25
Sandy lime—Oil show at 45	20	45
Lime	18	63
White lime	31	94
Sandy lime—Oil show at 106	12	106
White lime—Oil show at 112	6	112
DEVONIAN SYSTEM.		
Black shale	34	146
Sandy lime	20	166

SILURIAN SYSTEM.		
Lime shells	30	196
Lime	10	206
Sandy lime	10	216
White lime	12	228
Dark lime	22	250
Blue shale	3	253
Sandy lime	12	265
Lime shells	20	285
Dark sandy shale—Heavy gas at 288........	6	291
White sandy shale	2	293
Lime and shells	55	348
Sandy lime	12	360
Lime	24	384
Lime shells	60	444
Light slate	20	464
Lime shells	40	504
"Flint" and lime shells	25	529
Lime	35	564
Sandy lime	40	604
"Flint" shells	20	624
Lime	30	654
Blue lime	60	714
Slate and lime shells	45	759
Lime and "flint" shells	60	819
Lime shells	50	869
Light brown lime	96	965
White "flint" shells	55	1,020
"Flint" and lime shells	45	1,065
Brown "flint" shells	20	1,085
Lime shells	40	1,125
White lime	60	1,185
Dark sandy lime—Gas pocket at 1,190......	12	1,197
Lime	14	1,211

LOG No. 43. GEO. E. BOLES FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	8	8
Lime	12	20
Sand	15	35
Sandy lime	20	55
White lime	18	73
Light lime	23	96
Sandy lime	6	102
DEVONIAN SYSTEM.		
Black shale	32	134
Sandy lime	10	144

SILURIAN SYSTEM.		
Shelly lime	35	17[illegible]
Lime	12	191
Sandy lime—Gas to 263	92	283
Shelly lime	40	323
Blue shale	92	415
Lime shells	75	490
Sandy lime	128	618
"Flint" and sandy lime	30	648
Black lime	53	701
Lime shells and slate	50	751
Lime and flint shells	60	811
White lime	20	831
Green lime	12	843
Brown "flint"	90	933
White shelly "flint'	52	985
Brown "flint"	20	1,005
Lime shells	40	1,045
White lime	35	1,080
Dark lime	16	1,096

LOG No. 44.

J. E. BUSH FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	10	10
Dark lime	45	55
DEVONIAN SYSTEM.		
Black shale	30	85
Dark sand	10	95
SILURIAN SYSTEM.		
Dark lime	60	155
Light lime	56	211
Dark lime	154	365
Lime and sandy shells	43	408
Blue shale	104	512
Dark lime	12	524
Shelly lime	46	570
Sandy lime	7	577
Shelly lime—Gas at 578	83	660
Sandy lime	15	675
Brown "flint"	45	720
Light lime and shells	55	775
Dark lime	41	816
Lime shells	10	826
Black slate	30	856
Sandy lime	40	896
White lime	179	1,075

LOG No. 45.

C. C. McGUIRE FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	21	21
Hard lime	12	33
White sand	25	58
White sandy lime	24	82
White lime	15	97
Dark sandy lime	4	101
DEVONIAN SYSTEM.		
Black shale	34	135
Dark sandy lime	35	170
SILURIAN SYSTEM.		
Dark slate	20	190
Light lime	40	230
Dark lime	60	290
Light sandy lime	15	305
Dark lime	50	355
Blue shale	85	440
Light lime	18	458
Dark shelly lime	130	588
Dark sandy shale	140	728
Light lime	12	740
Dark lime	25	765
Brown lime	23	788
Light lime	10	798
Brown lime and "flint"	60	858

LOG No. 46.

B. AND K. NUCKOLS FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	3	3
Dark lime	18	21
Slate	8	29
White lime—gas at 105	141	170
Blue slate—Oil show at 180	10	180
Lime shells	2	182
DEVONIAN SYSTEM.		
Black shale	20	202
Blue lime	9	211
Gray lime—Oil show at 238	29	240

SILURIAN SYSTEM.		
Blue lime	10	250
Blue shale	25	275
Blue lime—Oil show	9	284
Light lime	8	292
Dark lime	200	492
Lime and shale	248	740
Dark lime	40	780
Light lime	75	855
Blue lime—Oil show	80	935
Sandy lime	12	947
Shells and slate	20	967
White lime—Gas at 1,025	150	1,117
Dark lime	119	1,236
Pink lime	60	1,296

LOG No. 47.

J. M. HAMMER FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	5	5
Gray lime	12	17
Dark shale and shells	3	20
Dark lime	10	30
Dark lime and shale	20	50
Gray lime—gas at 80	30	80
Light lime—gas at 90, 130 and 170	100	180
Slate and shells	25	205
DEVONIAN SYSTEM.		
Black shale	30	235
Dark lime—Oil and salt water at 240	50	285
Light slate	30	315
Light lime	200	515
Shells and shale	150	665
Dark lime	165	830

LOG No. 48.

W. E. PEDEN FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	13	13
Gray lime	50	63
Blue shale	10	73
Lime shell	2	75
DEVONIAN SYSTEM.		
Black shale	25	100
Dark lime—Oil show at 125	35	135

SILURIAN SYSTEM.		
Blue slate	25	160
Blue lime—Oil show at 178	165	325
Gray lime	80	405
Lime and slate—Gas at 530 and 555	180	585
Dark lime—Gas at 585 and 685	100	685
Blue lime	150	835
White lime	100	935
White slate	6	941
Gray lime	125	1,066
Dark lime	18	1,084
Light lime	100	1,184
Dark lime	466	1,650

LOG No. 49. BEALS FARM.—No. 1.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	6	6
Lime	159	165
DEVONIAN SYSTEM.		
Black shale	24	189
Lime	9	198
"Oil sand"	4	202

LOG No. 50. BEALS FARM.—No. 2.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	6	6
Lime	149	155
DEVONIAN SYSTEM.		
Black shale	40	195
Lime	6	201
"Oil sand"	5	206

In the following groups of old shallow well records in Barren county the divisions marked "Waverly," "Clinton," "Niagara" and "Trenton" are distinctions made by the driller and are obviously incorrect.

LOG No. 51. BOYD'S CREEK WELLS.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	58	58
DEVONIAN SYSTEM.		
Black shale	18	76
Top of 1st sand at		80
Gas and salt water at		87
Top of 2nd sand at		175
Bottom of well at		209

LOG No. 52.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	55	55
DEVONIAN SYSTEM.		
Black shale	35	90
Gas at		135
Bottom of well at		180

LOG No. 53.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	58	58
DEVONIAN SYSTEM.		
Black shale	27	85
Oil and gas at		87

LOG No. 54.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	70	70
DEVONIAN SYSTEM.		
Black shale	25	95
Oil and gas at		90
Oil and gas at		135
Bottom of well at		265

LOG No. 55.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	55	55
DEVONIAN SYSTEM.		
Black shale	15	70
Oil and gas at 70, 165 and 230		
Bottom of well at		241

LOG No. 56.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	73	73
DEVONIAN SYSTEM.		
Black shale	41	114
Oil at		116
Bottom of well at		205

LOG No. 57.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	58	58
DEVONIAN SYSTEM.		
Black shale	32	90
Oil at		37
Gas and oil at		145
Salt water at		156
Bottom of well at		201

LOG No. 58.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	112	112
DEVONIAN SYSTEM.		
Black shale	38	150
Amber oil at		84
Bottom of well at		168

LOG No. 59.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	68	68
DEVONIAN SYSTEM.		
Black shale	33	101
Oil at		225
Bottom of well at		272

LOG No. 60.

JACK KINSLOW FARM.
WELL No. 1.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	8	8
Waverly	49	57
DEVONIAN SYSTEM.		
Black shale	44	101
"Niagara"	24	125
"Clinton"	20	145

LOG No. 61.

WELL No. 2.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	12	12
St. Louis and Waverly	103	115
DEVONIAN SYSTEM.		
Black shale	42	157
"Niagara"	23	180
"Clinton" oil and gas at 183	20	200

LOG No. 62.

WELL No. 3.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	8	8
St. Louis	87	95
DEVONIAN SYSTEM.		
Black shale	46	141
"Niagara"	19	160
"Clinton' oil and gas at 165	20	180
Bottom of well at		195

LOG No. 63.

WELL No. 4.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	28	28
St. Louis	106	134
DEVONIAN SYSTEM.		
Black shale	45	179
"Niagara"	23	203
"Clinton" oil and gas at 205	20	223
Bottom of well at		223

LOG No. 64.

WELL No. 5.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	58	58
DEVONIAN SYSTEM.		
Black shale	30	88
"Niagara"	35	123
"Clinton" gas and oil at 123	25	148

LOG No. 65.

WELL No. 6.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	140	140
DEVONIAN SYSTEM.		
Black shale	53	193
"Niagara"	20	213
"Clinton" oil and gas at 213	23	236
Salt water at		260
Bottom of well at		341

LOG No. 66. MILLS FARM.

WELL No. 1.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	74	74
DEVONIAN SYSTEM.		
Black shale	31	105
"Trenton" oil, gas and water	15	120

LOG No 67.

WELL No. 2.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	74	74
DEVONIAN SYSTEM.		
Black shale	35	109
"Trenton" oil, gas and water	18	127

LOG No. 68. ELLIS FARM.

WELL No. 1.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	46	46
DEVONIAN SYSTEM.		
Black shale	29	75
Oil at		127

LOG No. 69.

WELL No. 2.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	42	42
DEVONIAN SYSTEM.		
Black shale	50	92
Oil and gas at		160

LOG No. 70.

SOUTHERN KENTUCKY OIL CO. WELLS.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	8	8
Waverly	67	75
DEVONIAN SYSTEM.		
Black shale	30	105
"Niagara" oil	36	141
"Clinton" gas at 150	20	161

LOG No. 71.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	187	187
DEVONIAN SYSTEM.		
Black shale	33	220
"Niagara"	20	240
"Clinton"	20	260
Oil and gas at		240
Salt water at		254

LOG No. 72.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	148	148
DEVONIAN SYSTEM.		
Black shale	32	180
"Niagara"	46	226
"Clinton"	20	246
Oil and gas at		226
Salt water at		230

LOG No. 73.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	130	130
DEVONIAN SYSTEM.		
Black shale	36	166
"Niagara"	36	202
"Clinton"	29	231
Oil at		202
Water at		205
Oil and water at		212

LOG No. 74.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	198	198
DEVONIAN SYSTEM.		
Black shale	32	230
"Niagara"	19	249
"Clinton"	29	278
Oil and gas at		249

LOG No. 75.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	150	150
DEVONIAN SYSTEM.		
Black shale	30	180
"Niagara"	37	217
"Clinton"	20	237
Gas at		180
Oil at		217

LOG No 76. OLD CARROLL WELLS.

Well No. 1—Gas at 819. Bottom at 875.

LOG No. 77.

Well No. 2—Oil at 355. Bottom at 355.

LOG No. 78.

Well No. 3—Oil at 100, gas at 715 and 1135. Bottom at 1135.

LOG No. 79.

Well No. 4—Gas at 750. Bottom at 750.

LOG No. 80.

Well No. 5—Oil at 110, gas at 1166. Bottom at 1166.

LOG No. 81. OLD HAVEN—CHASE WELLS.

North well ....Top of black shale at 230. Oil at 307

LOG No. 82.

West well ....Top of black shale at 225. Oil at 120

LOG No. 83.

South well ....Top of black shale at 228. Oil at 120

LOG No. 84.

East well ....Top of black shale at 225. Oil at 310

LOG No. 85.

Southeast well ....Top of black shale at 185. Oil at 310

LOG No. 86.

Southwest well ....Top of black shale at 225. Gas at 130

In Barren county the principal producing "sand" is either the Onondaga or Niagara limestone found below the Devonian Black Shale. There are, however, in some parts of the county "stray" sands in the Waverly limestone above the black shale which produce a very light, high gravity, amber crude. In the above Barren county wells the designations of "Waverly," "Niagaran," "Clinton," etc., are driller's terms and may or may not be correct.

BATH COUNTY.

LOG No. 87.

EWING HEIRS No. 23.

1 mile below head of Clear Creek.

Strata		Thickness	Depth
MISSISSIPPIAN SYSTEM.			
Waverly shales and sandstones		430	430
DEVONIAN SYSTEM.			
Black and blue shale		202	632
"Ragland" sand		48	680
SILURIAN SYSTEM.			
Soft blue shale		22	702
Blue and red shales		151	853
Limestone		14	867
Light blue shale		13	880
Light blue and pink shales		6	886
ORDOVICIAN SYSTEM.			
Limestone		27	913
Blue shale		37	950
Limestone		735	1685
Gray, crystalline limestone		215	1900
Green shale at 1900 (Top of Tyrone Ls.)			
Light dove-colored limestone		110	2010
White magnesian limestone		20	2030
Dark dove-colored limestone		470	2500
Dark and light gray limestones		8	2508
Dark gray limestone and shale		8	2516
Calcareous shale and sandy limestone		6	2522
Light dove-colored limestone		6	2528
Dark dove-colored limestone		18	2546
Light gray sandy limestone	Calciferous	12	2558
White sandy limestone	Calciferous	41	2599

Small flow mineral water at 2440—2446.

Heavy flow mineral water at 2578.

(Well starts near top of Waverly and goes down into Calciferous.)

LOG No. 88.

RAGLAND FARM—19 RECORDS.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	20	20
Blue shale	160	180
DEVONIAN SYSTEM.		
Black shale	206	386
White shale	7	393
Brown shale	13	406
Lime—Ragland sand—oil	19	425

LOG No. 89.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	34	34
Blue shale	61	95
DEVONIAN SYSTEM.		
Black shale	205	300
White shale	6	306
Brown shale	14	320
Lime—Ragland sand	24	344

LOG No. 90.

MISSISSIPPIAN SYSTEM.

Strata	Thickness	Depth
Gravel	37	37
Blue shale	60	97
DEVONIAN SYSTEM.		
Black shale	205	302
White shale	6	308
Brown shale	14	322
Lime—Ragland sand	24	366

LOG No. 91.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	40	40
Blue shale (Waverly)	503	543
DEVONIAN SYSTEM.		
Black shale	205	748
White shale	8	756
Brown shale	12	768
Lime—Ragland sand	18	786

LOG No. 92.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	15	15
Blue shale (Waverly)	533	548
DEVONIAN SYSTEM.		
Black shale	205	753
White shale	8	761
Brown shale	12	773
Lime—Ragland sand	18	791

LOG No. 93.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	40	40
Blue shale (Waverly)	607	647
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	852
White shale (Devonian)	8	860
Brown shale (Devonian)	12	872
Lime—Ragland sand	15	887

LOG No. 94.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	18	18
Blue shale	173	191
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	396
White shale (Devonian)	8	404
Brown shale (Devonian)	12	416
Lime—Ragland sand	10	426

LOG No. 95.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	40	40
Blue shale (Waverly)	503	543
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	748
White shale (Devonian)	8	756
Brown shale (Devonian)	12	768
Lime—Ragland sand	25	793

LOG No. 96.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	20	20
Blue shale	141	161
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	366
White shale (Devonian)	8	374
Brown shale (Devonian)	12	386
Lime—Ragland sand	19	405

LOG No. 97.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	20	20
Blue shale	61	81
DEVONIAN SYSTEM.		
Black shale (Devonian)	12	306
White shale (Devonian)	8	294
Black shale (Devonian)	205	286
(Ragland sand missing)		
Blue shale (Niagaran)	178	484
Second sand	10	494

LOG No. 98.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	22	22
Blue shale	136	158
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	363
White shale (Devonian)	6	369
Brown shale (Devonian)	9	378
Lime—Ragland sand	20	398

LOG No. 99.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	17	17
Blue shale	542	559
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	764
White shale (Devonian)	8	772
Brown shale (Devonian)	12	784
Lime—Ragland sand	20	804

LOG No. 100.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	35	35
Blue shale	65	100
DEVONIAN SYSTEM.		
Black shale (Devonian—thinned down)	100	200
Brown shale (Devonian—thinned down)	8	208
Brown shale (Devonian—thinned down)	14	222
Lime—Ragland sand	30	252
Red shale (Niagaran)	206	458
Lime—second sand	22	480
Shale	2	482

LOG No. 101.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	20	20
Blue shale	167	187
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	392
White shale (Devonian)	8	400
Brown shale (Devonian)	12	412
Lime—Ragland sand	14	426

LOG No. 102.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	50	50
Blue shale (Waverly)	449	499
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	704
White shale (Devonian)	8	712
Brown shale (Devonian)	12	724
Lime—Ragland sand	17	741

LOG No. 103.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	20	20
Blue shale	97	117
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	322
White shale (Devonian)	8	330
Brown shale (Devonian)	12	342
Lime—Ragland sand	15	357

LOG No. 104.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	20	20
Blue shale (Waverly)	522	542
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	747
White shale (Devonian)	8	755
Brown shale (Devonian)	12	767
Lime—Ragland sand	20	787

LOG No. 105.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	20	20
Blue shale	20	40
DEVONIAN SYSTEM.		
Black shale (Devonian)	224	264
White shale	4	268
Lime—Ragland Sand	32	300
Shale	4	304
Stray sand—Oil	18	322
Shale	3	325

LOG No. 106.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	34	34
Blue shale	61	95
DEVONIAN SYSTEM.		
Black shale (Devonian)	200	295
White shale (Devonian)	8	303
Brown shale (Devonian)	12	315
Lime—Ragland sand	27	342

LOG No. 107.

EWING FARM.—8 RECORDS.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	50	50
White slate (Waverly)	561	611
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	816
White shale (Devonian)	8	824
Brown shale (Devonian)	15	839
Lime—Ragland sand	31	870

LOG No. 108.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	56	56
Blue shale (Waverly)	607	663
DEVONIAN SYSTEM.		
Black shale	205	868
White shale	8	876
Brown shale	12	888
Lime—Ragland sand	30	918
Red shale (Niagaran)	245	1163
Lime—second sand	15	1178
Shale	15	1193

LOG No. 109.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	20	20
Blue shale	391	411
DEVONIAN SYSTEM.		
Brown shale } (Devonian)	205	616
White shale } (Devonian)	8	624
Black shale } (Devonian)	12	636
Lime—Ragland sand	24	660

LOG No. 110.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Blue shale (Waverly)	590	590
DEVONIAN SYSTEM.		
Black shale } (Devonian)	206	796
White shale } (Devonian)	5	801
Brown shale } (Devonian)	15	816
Lime—Ragland sand	25	841

LOG No. 111.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	50	50
Blue shale	555	605
DEVONIAN SYSTEM.		
Black shale	205	810
White shale	5	815
Brown shale	15	830
Lime—Ragland sand	25	855

LOG No. 112.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	40	40
Blue shale (Waverly)	662	702
DEVONIAN SYSTEM.		
Black shale } (Devonian)	206	908
White shale } (Devonian)	6	914
Brown shale } (Devonian)	14	928
Lime—Ragland sand	25	953

LOG No. 113.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	20	20
Blue shale (Waverly)	527	547
DEVONIAN SYSTEM.		
Black shale } (Devonian)	205	752
White shale } (Devonian)	8	760
Brown shale } (Devonian)	12	772
Lime—Ragland sand	22	794

LOG No. 114.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	50	50
Blue shale	565	615
DEVONIAN SYSTEM.		
Black shale } (Devonian)	205	820
White shale } (Devonian)	8	828
Brown shale } (Devonian)	12	840
Lime—Ragland sand	33	873

LOG No. 115.

WOOLEY FARM.—19 RECORDS.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	20	20
Blue shale	250	270
DEVONIAN SYSTEM.		
Black shale } (Devonian)	205	475
White shale } (Devonian)	8	483
Brown shale } (Devonian)	12	495
"Ragland" sand	30	525
Blue shale (Niagaran)	179	704
"Second" sand	20	724

LOG No. 116.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Sand and gravel	15	15
DEVONIAN SYSTEM.		
Black shale	145	160
"Ragland" sand	28	188
Red shale (Niagaran)	157	345
"Second" sand	10	355
Blue shale	25	380
Hard, red sand	8	388
Soft lime	16	404
Dark lime	96	500

LOG No. 117.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	2	2
Sand	155	157
DEVONIAN SYSTEM.		
Black shale (Devonian)	113	270
"Ragland" sand	24	294
Light shale (Niagaran)	220	514
"Second" sand	83	597
Slate	18	615

LOG No. 118.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	6	6
White shale	264	270
Brown shale	20	290
White shale	20	310
DEVONIAN SYSTEM.		
Brown shale (Devonian)	162	472
White shale	12	484
Brown shale	6	490
Lime—Ragland sand	19	509

LOG No. 119.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	18	18
White shale	280	298
DEVONIAN SYSTEM.		
Black shale (Devonian)	190	488
White shale (Devonian)	10	498
Black shale (Devonian)	15	513
Lime—Ragland sand	22	535

LOG No. 120.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	10	10
White shale	298	308
DEVONIAN SYSTEM.		
Black shale (Devonian)	207	515
Brown shale (Devonian)	10	525
White shale (Devonian)	5	530
Lime—Ragland sand	19	549

LOG No. 121.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
White lime	50	50
Blue shale (Waverly)	508	558
DEVONIAN SYSTEM.		
Black shale (Devonian)	13	783
White shale (Devonian)	6	770
Brown shale (Devonian)	206	764
Lime—Ragland sand	22	805

LOG No. 122.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Blue shale	557	557
DEVONIAN SYSTEM.		
Black shale (Devonian)	206	763
White shale (Devonian)	6	769
Brown shale (Devonian)	14	783
Lime—Ragland sand	24	807

LOG No. 123.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Blue shale	284	284
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	489
White shale (Devonian)	6	495
Brown shale (Devonian)	13	508
Lime—Ragland sand	22	530

LOG No. 124.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Blue shale	298	298
DEVONIAN SYSTEM.		
Black shale (Devonian)	207	505
White shale (Devonian)	7	512
Brown shale (Devonian)	14	526
Lime—Ragland sand	20	546

LOG No. 125.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Blue shale	550	550
DEVONIAN SYSTEM.		
Black shale (Devonian)	207	757
White shale (Devonian)	6	763
Brown shale (Devonian)	14	777
Lime—Ragland sand	26	803

LOG No. 126.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Blue shale	307	307
DEVONIAN SYSTEM.		
Black shale (Devonian)	207	514
White shale (Devonian)	6	520
Brown shale (Devonian)	14	534
Lime—Ragland sand	15	549

LOG No. 127.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	10	10
Lime	40	50
Blue shale (Waverly)	492	542
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	747
White shale (Devonian)	8	755
Brown shale (Devonian)	12	767
Lime—Ragland sand	22	789

LOG No. 128.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	50	50
Blue shale (Waverly)	488	538
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	743
White shale (Devonian)	8	751
Brown shale (Devonian)	12	763
Lime—Ragland sand	21	784

LOG No. 129.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	80	80
Blue shale (Waverly)	533	613
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	818
White shale (Devonian)	8	826
Brown shale (Devonian)	12	838
Lime—Ragland sand	20	858

LOG No. 130.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	20	20
Lime	40	60
Blue shale (Waverly)	515	575
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	780
White shale (Devonian)	8	788
Brown shale (Devonian)	12	800
Lime—Ragland sand	26	826

LOG No. 131.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	40	40
Blue shale (Waverly)	511	551
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	756
White shale (Devonian)	8	764
Brown shale (Devonian)	12	776
Lime—Ragland sand	21	797

LOG No. 132.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel and blue shale	226	226
DEVONIAN SYSTEM.		
Black shale (Devonian)	205	431
White shale (Devonian)	8	439
Brown shale (Devonian)	12	451
Lime—Ragland sand	18	469

LOG No. 133.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	6	6
Brown shale	5	11
White shale	20	31
DEVONIAN SYSTEM.		
Brown shale	140	171
White shale	20	191
Brown shale	5	196
White shale	9	205
Lime—Ragland sand	6	211
Blue shale	10	221
Soft lime	12	233
Red shale	155	388
Hard lime	12	400
Blue shale	10	410
"Second" sand	14	424
Blue shale	3	427

LOG No. 134.

McKINNEY FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay, sand and gravel	20	20
White shale	120	140
Brown shale	16	156
White shale	20	176
DEVONIAN SYSTEM.		
Brown shale	176	352
Lime—Ragland sand	15	367

In Bath county the producing (Ragland) sand is the Onondaga (Corniferous) limestone directly beneath the Devonian Black Shale.

BELL COUNTY.

LOG No. 135.

WELL NEAR CHENOA.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM		
Clay	27	27
Slate	45	72
Brown sand	5	77
Coal	4	81
Slate	10	91
Water sand	36	127
Slate	5	132
White sand	37	169
Slate	76	245
Coal	4	249
Slate and shale	60	309
Coal	2	311
Slate	20	331
Coal	2	333
Slate	40	373
Water sand	10	383
Slate	28	411
Coal	4	415
Fire-clay	2	417
Slate	37	454
Sand	30	484
Slate	8	492
Black sand	9	501
Slate and shale	90	591
Black sand	22	613
Slate	35	648
Black sand	5	653
Slate	5	658
White sand	11	669
Slate	3	672
White sand	11	683
Slate	30	713
Gray sand	20	733
White sand	45	778
Slate	15	793
Black sand	10	803
Slate	35	838
Black sand	2	840
Slate	35	875
Black sand	10	885
Slate	15	900
White sand	50	950

Slate	38	988
White sand	256	1244
Slate	4	1248
White sand	84	1332
Coal	4	1336
White sand	176	1512
Slate	5	1517
White sand	111	1628
Slate	5	1633
White sand	74	1707
Coal	2	1709
White sand	72	1781
Coal	6	1787
White sand	30	1817
Total depth		1817

This well is entirely in the Pennsylvanian which in Bell county is very thick. Deeper sands productive elsewhere may be expected to be barren in Bell county for this region is both faulted and synclinal.

BOYD COUNTY.

LOG No. 136.

BIG SANDY OIL AND GAS CO. WELL.
Catletts Creek, 1½ Miles from Catlettsburg.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay and sand	36	36
Sandstone	104	140
Clay shale	100	240
Gray sand	30	270
Shale	150	420
Sand (base of Pottsville)	150	570
MISSISSIPPIAN SYSTEM.		
Limestone—"Big Lime"	280	850
Black sand	100	950
White sand—Salt water	15	965
Black sand	35	1000
Black shale—Oil show	329	1329
Sand—Oil	51	1380
Black slate (Sunbury shale)	45	1425
Brown sand (Berea?)	15	1440
Shale and sand	5	1445
DEVONIAN SYSTEM.		
Black slate	130	1575
White slate	40	1615

BELL COUNTY.

LOG No. 135.

WELL NEAR CHENOA.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM		
Clay	27	27
Slate	45	72
Brown sand	5	77
Coal	4	81
Slate	10	91
Water sand	36	127
Slate	5	132
White sand	37	169
Slate	76	245
Coal	4	249
Slate and shale	60	309
Coal	2	311
Slate	20	331
Coal	2	333
Slate	40	373
Water sand	10	383
Slate	28	411
Coal	4	415
Fire-clay	2	417
Slate	37	454
Sand	30	484
Slate	8	492
Black sand	9	501
Slate and shale	90	591
Black sand	22	613
Slate	35	648
Black sand	5	653
Slate	5	658
White sand	11	669
Slate	3	672
White sand	11	683
Slate	30	713
Gray sand	20	733
White sand	45	778
Slate	15	793
Black sand	10	803
Slate	35	838
Black sand	2	840
Slate	35	875
Black sand	10	885
Slate	15	900
White sand	50	950

Slate	38	988
White sand	256	1244
Slate	4	1248
White sand	84	1332
Coal	4	1336
White sand	176	1512
Slate	5	1517
White sand	111	1628
Slate	5	1633
White sand	74	1707
Coal	2	1709
White sand	72	1781
Coal	6	1787
White sand	30	1817
Total depth		1817

This well is entirely in the Pennsylvanian which in Bell county is very thick. Deeper sands productive elsewhere may be expected to be barren in Bell county for this region is both faulted and synclinal.

BOYD COUNTY.

LOG No. 136.

BIG SANDY OIL AND GAS CO. WELL,
Catletts Creek, 1½ Miles from Catlettsburg.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay and sand	36	36
Sandstone	104	140
Clay shale	100	240
Gray sand	30	270
Shale	150	420
Sand (base of Pottsville)	150	570
MISSISSIPPIAN SYSTEM.		
Limestone—"Big Lime"	280	850
Black sand	100	950
White sand—Salt water	15	965
Black sand	35	1000
Black shale—Oil show	329	1329
Sand—Oil	51	1380
Black slate (Sunbury shale)	45	1425
Brown sand (Berea?)	15	1440
Shale and sand	5	1445
DEVONIAN SYSTEM.		
Black slate	130	1575
White slate	40	1615

SILURIAN SYSTEM.		
Slate and shale	180	1795
Slate and shells	50	1845
Sand—Gas	5	1850
Black slate	10	1860
Black sand	15	1875
Black sand and slate	3	1878
Blue slate	12	1890
Brown slate	7	1897
Black slate	68	1965
Black sand—Gas	9	1974
Black shale	52	2126

LOG No. 137.

RICHARDSON WELL,
One Mile South of Catlettsburg.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Sand	50	60
Coal	3	63
Sand and slate	167	230
Coal	5	235
Slate	270	505
Sand—Salt water and gas	205	710
MISSISSIPPIAN SYSTEM.		
Limestone—"Big lime"	270	980
Sand	70	1050
Slate	15	1065
Slate and shells	373	1438
Black slate (Sunbury shale)	20	1458
Berea sand—oil	45	1503
Slate	15	1518
Dark sand	10	1528
DEVONIAN SYSTEM.		
Black slate	40	1568
Gray sand	15	1583
SILURIAN SYSTEM.		
Slate and shells	447	2030
Black sand (lime?) Gas	40	2070
Light slate	192	2262
Brown lime	60	2322

The 40 foot black "sand" at depth of 2030 to 2070 feet is probably the Niagara "pay" Limestone but the section is evidently quite different from that found in the more typical occurrences in Estill, Lee and Wolfe counties to the west.

LOG No. 138.

BELLEFONTE No. 1 GAS WELL.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	9	9
Lime	15	24
Blue shale	126	150
Slate and shells	125	275
Blue shale	50	325
Shell	2	327
Lime	23	350
Slate	15	365
Salt sand	115	480
Slate—Cased at 482	30	510
Water sand (base of Pottsville)	20	530
MISSISSIPPIAN SYSTEM.		
White lime—"Big lime"	40	570
Slate	30	600
"Big Injun" (?) sand	20	620
Lime and slate	15	635
Slate	70	705
Sand	10	715
Slate—Cased at 730	475	1190
Brown shale (Sunbury shale)	18	1208
"Berea" sand*—Show of oil and gas	112	1320
Red rock	20	1340
Slate	20	1360
DEVONIAN SYSTEM.		
Brown shale (Devonian)	130	1490
White slate (Devonian)	35	1525
Brown shale (Devonian)	265	1790
White slate (Devonian)	80	1870
Brown shale (Devonian)	110	1980
Limy slate (Devonian)	35	2015
Brown shale (Devonian)	10	2025
Dark lime	225	2250
Light lime	125	2375
Slate and shells	40	2415
Hard white lime	35	2450

*Only the upper part of this is Berea

LOG No. 139.

GAS WELL AT BELLEFONTE BRICK PLANT.

Hoods Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	20	20
Gravel and quicksand	44	64
Lime	11	75
Blue shale—Cased at 134	85	160
Hard lime	50	210
Blue shale	170	380
Water sand	20	400
MISSISSIPPIAN SYSTEM.		
White slate—Cased at 412	40	440
Hard lime—"Big lime"	60	500
Slate and lime shell	100	600
"Big Injun" (?) sand	50	650
Blue slate—Cased at 725	75	725
"Berea" (?) (Waverly)	450	1175
Slate (Sunbury?)	5	1180
Lime (?)	60	1240
DEVONIAN SYSTEM.		
Brown shale	470	1710

LOG No. 140. ROBERT PRICHARD FARM,

Burrough near Kavanaugh.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Blue shale	38	38
Gravel	5	43
Blue shale	20	63
Slate	25	88
Sand	20	108
Slate	10	118
Sand	50	168
Slate and shells	174	342
Coal	3	345
Slate	27	372
Sand and lime	68	440
Sand	45	485
Slate	35	520
Sand	55	575
Slate	5	580
Brown slate and shells	165	745
Sand	20	765
Black slate, slate and shells	79	844
Sand	104	948
Slate	30	978
Sand	90	1068

MISSISSIPPIAN SYSTEM.		
Black slate and lime	112	1180
"Big lime"	58	1238
Sand and slate	187	1425
Dark slate	440	1865
Black slate (Sunbury)	20	1885
Berea sand	40	1925
Slate and shells	40	1965
DEVONIAN SYSTEM.		
Dark slate	482	2447
Dark slate and black lime	161	2608
White slate	128	2736
Brown slate	49	2785
Lime	95	2880

LOG No. 141.

CLINTON WELL,
Shopes Creek.

Strata	Thickness	Depth.
PENNSYLVANIAN SYSTEM.		
Soil	15	15
Gray sand	10	25
Blue shale	10	35
Coal	4	39
Slate	31	70
Coal	4	74
Slate	14	88
Sand	26	114
White shale	56	170
Black slate 8 in. casing	65	235
White shale	50	285
Coal	3	288
Blue shale	14	302
Black slate	113	415
Sand—Salt water	55	470
Slate	20	490
Sand—Salt water	50	540
MISSISSIPPIAN SYSTEM.		
Limestone ("Big lime")	90	630
Slate	4	634
Sand—Salt water at 705	131	765
Slate—Cased at 765	40	805
Sand and slate	411	1216
Black shale (Sunbury shale)	14	1230
Sand (Berea?)—Oil smell	22	1252
Slate—Oil smell	10	1262
Sand—Oil smell	44	1306

DEVONIAN SYSTEM.		
Black and white slates (Devonian)	421	1737
Sand (Devonian)	10	1747
Black and white slates (Devonian)	283	2030
Slate and sand—Gas	20	2050
Brown limestone (Ragland?)	50	2100

LOG No. 142.

WELL AT SUMMIT STATION.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand and shales (Pottsville)	675	675
MISSISSIPPIAN SYSTEM.		
"Big lime"	60	735
Sand and shales (Waverly)	590	1325
Black shale (Sunbury)	20	1345
Sand—Gas (Berea)	13	1358
Dark shale	57	1415

Well started 52 feet above No. 6 coal and stopped just above the Devonian.

LOG No. 143.

LONGABAUGH WELL.

Four Miles South of Ashland.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	14	14
Slate	10	24
White sand	38	62
Slate	28	90
Sand	48	138
Slate	38	176
Sand	20	196
Black slate	110	306
Sand—Salt water	83	389
Slate	15	404
Sand	20	424
Slate	15	439
Sand—Salt water	61	500
MISSISSIPPIAN SYSTEM.		
"Big lime"	50	550
Shales and sand—Salt water at 698	532	1082

BOYLE COUNTY.

LOG No. 144.

J. C. B. NOBLE FARM,
2 1-2 Miles S. W. of Junction City.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	18	18
Light shale	19	37
DEVONIAN SYSTEM.		
Black shale	59	96
Lime	19	115
Light shale		

LOG No. 145.

J. R. AVERY FARM,
2 1-2 Miles S. W. of Junction City.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Light shale	65	65
DEVONIAN SYSTEM.		
Black shale	70	135
Lime	19	154
Light shale		

BREATHITT COUNTY.

LOG No. 146.

OLD WELL ON FROZEN CREEK.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	12	12
White sand	53	65
Bastard lime (?)—Oil show	2	67
White sand	73	140

LOG No. 147.

J. H. WINTERBOTHAM FARM,
Little Frozen Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	11	11
Sand	90	101
Slate	50	151
Sand	274	425
Slate	30	455
Sand	30	485

MISSISSIPPIAN SYSTEM.		
Lime "Big lime"	175	660
Sand	50	710
Shale (Waverly)	400	1110
Brown shale (Sunbury?)	10	1120
Sand (Berea?)	35	1155
DEVONIAN SYSTEM.		
Brown shale	218	1373
Sand (?)—Gas	3	1376
Lime	11	1387
Brown lime—Oil	11	1398
Sand (?)	6	1404

LOG No. 148.

ELKATWA WELL ON CANEY CREEK.

R. A. Chiles, Lessee.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	1	20
Pottsville	565	585
MISSISSIPPIAN SYSTEM.		
Shale	55	640
Little Lime	13	653
Shale	2	635
Big Lime	145	800
Big Injun	90	890
Red Rock Slate	385	1275
Berea	25	1300
DEVONIAN SYSTEM.		
Brown shale	360	1560
White slate	7	1567
Cap Rock	25	1592
Sand (Small oil flow)	1	1593
Sand (Small salt water flow)	3	1596
Hard dry sand		

(This record incomplete).

LOG No. 149.

WELL ON BIG BRANCH,
Near Haddix.

Strata	Thickness	Depth
Surface	8	8
PENNSYLVANIAN SYSTEM.		
Sand Rock	12	20
Slate	2	22
Coal	3	25
Blue mud	5	30
Sand Rock	18	45
Water sand—lots of water	5	50
Sand Rock	7	57
Black shale	13	70
Blue mud	40	110
Blue Grit	55	165
Black shale	60	225
Sand Rock	25	250
Blue shale	10	260
Fire clay	8	268
Sand rock	12	280
Blue mud	45	325
Sand Rock	15	340
Black mud	50	390
Sand rock hard	181	571
Black slate	37	608
Sand rock	50	658
Black slate	87	745
Sand rock 2 ft. coal	185	930
MISSISSIPPIAN SYSTEM.		
Red rock	5	935
White slate	5	940
White Grit-water 110 ft.	170	1110
Slate—in	30	1140
Lime	20	1160
Slate	8	1168
Lime—Gas 178 ft. in "Big"	222	1390
Black hard	20	1410
Lime shell	10	1420
Shale	5	1425
Red rock	40	1465
Brown shale	30	1495
Blue slate	55	1550
Lime shell	25	1575
Slate (Full of shell)	184	1759

DEVONIAN SYSTEM.		
Brown shale	253	2012
Blue mud	2	2014
Brown shale	42	2056
Fire clay	12	2068
Cap and sand into Red Rock	212	2280
Total depth		2280

LOG No. 150.

GREEN LAWSON No. 1.

On Mill Creek which runs into North Fork of Kentucky above War Creek. Elevation 720. Drilled in about September 18, 1918.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
To top of big lime	421	
MISSISSIPPIAN AND DEVONIAN SYSTEMS.		
To top of sand	1273	
First change	10	1283
Second change	2	1285
Third change	3	1288
Fourth change	5	1293
Fifth change	5	1298
At	10	1308

No oil or salt water.

Slight show of oil in Berea.

A little gas from Corniferous.

Record supplied by Bumgardner, of Filmore. W. P. Williams Oil Co., Operators. E. M. Henshaw, Contractor.

LOG No. 151.

Watkins No. 1. Little Frozen. Elevation 920 feet.

W. P. Williams Oil Co., Operator. Henshaw & Drake, Contractors.

Strata	Thickness	Depth
To Little Lime	573	573
To Big Lime	10	583
To bottom of lime	187	770
To white slate	0	770 oil and gas
To top sand	695	1465
To first pay	26	1491 oil
To second pay	5	1496 oil best
To stopped	9	1505

Flowed four to six times daily before pump was installed. Information given by Henshaw, Monday, August 12, 1918. Well finished previous week. Reported from 50-200 barrels.

LOG No. 152.

BRECK CRAWFORD FARM.

Mouth of Cope's Branch.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	8	8
Lime	22	30
Sand	55	85
Slate	15	100
Sand	62	162
Slate	5	167
Sand	13	180
Slate	90	270
Sand	80	350
Slate	7	357
White sand	80	437
Brown slate	3	440
MISSISSIPPIAN SYSTEM.		
Sandy lime	3	443
Sandy slate	29	472
Sandy lime	18	490
Slate	16	506
Lime—"Big lime" Gas at 620	204	710
Sandy shale	10	720
White shale	32	752
Sand	143	895
Sandy shale	290	1185
DEVONIAN SYSTEM.		
Brown shale	159	1344
Black shale	3	1347
Lime shell	1	1348
Sandy shell	14	1362
Black shell	18	1380
Brown lime	20	1400
White lime	35	1435
Sandy lime. Oil and water at 1460	112	1547
Blue sandy shale	10	1557
Brown lime	10	1567

LOG No. 153.

HARGIS FARM

Four miles up South Fork of Quicksand Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand and gravel	12	12
Sand	53	65
Coal	2	67
Slate	23	90
Coal	2	92
Sand	10	102
Slate	43	145
Coal	3	148
Sand	10	158
Slate	9	167
Coal	3	170
Slate	70	240
Sand	10	250
Slate	37	287
Sand	60	347
Slate	10	357
Sand	200	557
Slate	93	650
Sand	200	850
Slate	5	855
Sand (base of Pottsville)	115	970
MISSISSIPPIAN SYSTEM.		
"Little lime"	25	995
"Pencil cave"	5	1000
"Big lime"	190	1190
Blue sand	100	1290
Red rock	40	1330
Sandy slate	175	1505
"Berea Grit" (?)*—Oil and gas show	70	1575
Slate	30	1605
DEVONIAN SYSTEM.		
Black shale	275	1880
White slate	30	1910
Lime	114	2024
Slate	2	2026

*The Berea probably does not extend this far south.

LOG No. 154.

WELL ON WOLF CREEK AT WOLFCOAL.

Big Bird Oil & Gas Co., Lessee.

T. H. Drake, Contractor & Driller.

Strata	Thickness	Depth
Top soil	10	10
PENNSYLVANIAN SYSTEM.		
Broken lime	5	15
Blue slate	115	130
Sand	15	145
Slate	5	150
Sand	25	175
Shale	2 cased with 177-8¼	177
Black slate	123	300
Sand	150 called salt sand	450
Shale	100	550
Sand	126	676
Coal	10	686
Shale	150	836
Sand	84	920
MISSISSIPPIAN SYSTEM.		
Shale	80	1000
Sand	70 showing of oil	1070
Red rock	30	1100
Lime shell	5 cased with 6¼ casing	1105
Sand	50	1155
Shale	50	1205
Broken lime	45	1250
Big lime	115 oil and gas flowed 60 hrs.	1365
Big lime	50	1415
Lime shell	10 green in color	1425
Shale	90 Red rock	1515
Blue slate	150	1665
Sand	50 Berea sand S. of O.	1715
Shale	35 green	1750
Shale	30 light	1780
Sand	20	1800
Shale	15 pink	1815
Shale	15 light	1830

DEVONIAN SYSTEM.

Brown shale	210	2040
Shale	10 light	2050
Brown shale	25	2075
Sand shale	25	2100
"Corniferous" lime	100 in and still drilling.	

LOG No. 155. DAVIS FARM.

7 Miles up South Fork of Quicksand Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	15	15
Slate	25	40
Lime	10	50
Slate	425	475
Sand	100	575
Slate	10	585
Sand	30	615
Slate	5	620
Sand	280	900
MISSISSIPPIAN SYSTEM.		
Slate	90	990
"Little lime"	25	1015
White sand	55	1070
Lime	10	1080
Slate	15	1095
Lime	21	1116
"Pencil cave"	2	1118
"Big lime"	182	1300
Blue sand	80	1380
Red rock	77	1457
Slate	108	1565
Sand	10	1575
Slate	37	1612
"Berea" (?)*	40	1652
Break	5	1657
"Berea" ?)	68	1725
DEVONIAN SYSTEM.		
Black slate	305	2030
White slate	25	2055
Lime	175	2230
Sand	60	2290
Slate	40	2330
Red rock	70	2400
Blue slate	50	2450
Red rock	50	2500

*Berea probably not this far south.

LOG No. 156.

Well on the J. A. Turner farm 1 mile up the right fork of Longs Creek.
Started drilling January 6, 1919, finished May 5, 1919.
Drilled by Foreman and Harris.

Casing head elevation 805 feet A. T.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	13	13
Lime—blue	7	20
Gray sand (water)	20	40
Lime	20	60
Brown slate	15	75
White lime	15	90
Blue slate	10	100
White sand—hard	5	105
Blue slate	20	125
Sand	10	135
At 130 feet gas about 500,000 cu. feet.		
Slate	25	160
Sand	15	175
Black slate	15	190
White sand	20	210
Slate	20	230
Blue lime	10	240
White shale	3	243
White lime	12	255
White slate	5	260
Lime	25	285
Black slate	15	300
White sand	20	320
Brown slate	10	330
Sand	26	356
Brown slate	44	390
Lime	10	400
Blue slate	5	405
"Salt" sand	55	460
Slate	20	480
Set 8¼ casing at 460.		
White shale	30	510
Gas at 480.		
Slate	50	560
White shale	12	572
Sand second "salt" sand	60	632
Blue slate	18	650
Sand very hard	175	825
White shale	5	830
White sand	90	920

MISSISSIPPIAN SYSTEM.		
Blue slate	18	938
Sand hard	22	950
Blue slate	20	970
Little lime	15	985
Black slate	22	1007
"Big lime" set casing 42 ft in	183	1190
White slate	20	1210
Red rock	30	1240
Injun sand	15	1255
Red rock	52	1307
Waverly shale	153	1560
DEVONIAN SYSTEM.		
Brown shale	185	1745
White slate	15	1760
Brown shale	15	1775
White slate and sand	15	1790
Black shale	17	1807
Top of "Irvine" Limestone		1807
"Irvine" sand	248	2055
Red rock	10	2065

Only a small upper part of the 248 feet marked "Irvine" sand is the Onondaga or Corniferous Limestone. The lower and greater part belongs in the Niagara series.

BRECKINRIDGE COUNTY.

LOG No. 157.

WELL AT CLOVERPORT.

(Gas Well.)

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	12	12
Brown shale	20	32
Blue shale	26	58
Gray lime	30	88
Blue shale	1	89
Gray lime	2	91
Blue shale	11	102
Brown shale	11	113
White sand	32	145
Blue shale	38	183
Fossil lime	2	185
Blue Shale	6	191
Lime	7	198
Shale	36	234
Lime	28	262

Shale	18	280
Lime	20	300
Dark shale	8	308
Lime	15	323
Shale	6	329
Lime	60	389
Shale	12	401
Lime—Sulphur water	55	456
Shale	4	460
Lime—Salt water	93	553
Sand	20	573
Lime—Oil shows	299	872
Gray porous lime—Gas	15	887
Blue lime.		

Well starts in the Chester and is all in the Mississippian.

LOG No. 158. ERNEST FREY FARM.

3 Miles S. E. of Cloverport.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	18	18
Lime	27	45
Red shale	25	70
Gray shale	25	95
Broken lime	30	125
White and red shales	75	200
Sandy lime	10	210
Shale	25	235
White lime	35	270
Slate	15	285
White lime	25	310
Shales	25	335
Gray lime—Slate break at 405	390	725
Brown sandy lime	125	850
Dark sandy lime	100	950
Brown lime	10	960
Broken dark lime—streaks of red and black shale	65	1025
Black shelly lime—black and red slate breaks	35	1060
Dark lime	439	1499
DEVONIAN SYSTEM.		
Black shale	117	1616
Light gray lime	14	1630
Brown lime	15	1645
Gray lime	126	1771

(Well starts in Chester).

LOG No. 159.

WELL AT WEBSTER.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	895	895
DEVONIAN SYSTEM.		
Black shale	75	970

LOG No. 160.

WELL AT HARDINSBURG.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	17	17
Lime	35	52
Sand	57	109
Lime	25	134
Sand	76	210
Lime	735	945
Lime and shale—Gas at 1055	435	1380
DEVONIAN SYSTEM.		
Black shale	95	1475
Lime	20	1495

(Well starts in Chester).

LOG No. 161.

WELL AT STEPHENSPORT.
(From drillings).

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	22	22
Gray shale	3	25
Gray lime	10	35
Brown sand	32	67
Gray, crinoidal lime	at	75
Gray lime	"	85
White lime	"	96
Gray lime	"	100
Black shale	"	130
Light dove-colored lime	"	135
Soft white lime	"	155
Gray and pink lime	"	230
Gray oolite	"	240
Lithographic lime	"	276
Gray oolitic lime	"	300
Gray and white crinoidal lime	"	317
White lime	"	335
Gray lime	"	350

White lime	at 380 and 395
Gray lime	" 420
Black shale	" 425
Gray lime	" 435 and 450
Light lime	" 470
Dark lime	" 475
Dark lime and black shale mixed	" 482 and 500
White quartzite	" 510
Dove-colored lime	" 515
Gray lime	" 518 and 525
Black lime	" 530
Gray lime	" 535
Black lime	" 540
Gray lime	" 555 and 585
Black lime	" 600
Light mottled lime	" 620
Dark gray lime	" 630
White quartzite	" 638
Brown lime	" 644 and 650
Gray lime	at 656, 662, 680, 686 and 692
White lime	at 700
Gray lime	at 712, 722, 735, 755 to 807 and 813
Black lime	at 816, 835 and 840
White lime	at 865
Gray and white lime	" 890
Dove-colored lime	" 900
Gray lime	at 915, 1030, 1045, 1050 to 1100, 1124 and 1130
White and gray lime	at 1138
Very dark lime	" 1150
Black lime	1155 to 1185
Sandy black lime	at 1230

DEVONIAN SYSTEM.

Black shale	1253 to 131[illegible]

(Well starts in Chester and stops in Black Shale).

BUTLER COUNTY.

LOG No. 162.

W. J. TUCK FARM

Near Sugar Grove.

Strata	Thickness	Dept.
MISSISSIPPIAN SYSTEM.		
Soil	10	10
Lime	173	183
White sand	10	193
White lime	15	208
Sand (Cypress)	207	415

Iron pyrites	5	420
Lime and shaly sand	170	590
Lime and sand—Black sulphur water at 590	85	675
Salt water sand	105	780
Blue lime	220	1000
White sand (lime?)	38	1038
Broken lime	62	1100
Blue lime	100	1200
Slate and shale	50	1250
Hard dark lime	90	1340
Soft white lime	90	1430
DEVONIAN SYSTEM.		
Black shale	110	1540
Lime	20	1560
White lime	3	1563
Brown lime	49	1612
Gray lime	43	1655
White lime	12	1667
Blue lime	3	1670
Oil sand (lime)—Salt water	15	1685

(Well starts in Chester.)

CALDWELL COUNTY.

LOG No. 163.

EUGENE YOUNG WELL
Three miles N. E. of Fredonia.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	15	15
Slate and lime	10	25
Hard black lime	25	50
Slate	25	75
Gray sand	10	85
Slate and shaly white sand	40	125
White sand	50	175
Red shale	10	180
Sand	55	235
Slate	65	300
Lime—Black sulphur water	25	325
Slate and shale	75	400
Slate and shaly lime	40	440
Hard light lime	50	490
Sand and slate	30	520

White quartzite (?)	55	575
Sand	25	600
Lime	35	635
Slate	15	650
Hard lime	15	665
Pink shale	15	680
Lime—Salt water at 740	310	990
Hard sand	10	1000
Lime	10	1010
Sand	10	1020
Lime	15	1035
Sand	265	1300
Blue and black hard lime	1044	2344

(The Devonian Shale does not show in this record but was probably included in the last 1044 feet.)

CARROLL COUNTY.

LOG No. 164.

WELL AT CARROLLTON
(Partial record—from drillings).

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Soil	96	96
Light crystalline lime	at	96
Gray lime	"	180
Light crystalline lime	"	200
Light brown lime	"	230
Light magnesian lime	"	242
Gray magnesian lime	"	260
Gray lime	"	280
Light fine-grained lime	"	285
Light crystalline and gray fossil lime	"	335
Tyrone limestone	at 420, 430 and	475
Magnesian limestone	at	495
Chazy limestone		500 to 1000
Green shale	at	1000
Calciferous—"Blue Lick" water		1000 to 1145

CARTER COUNTY.

LOG No. 165.

Well near Ratcliff (Lawrence Co.).

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand and gravel	40	40
Slate	21	61
Sand, hard	36	97
Black slate	18	115
Coal	4	119
Black slate	61	180
Coal	5	185
Black slate	85	270
Gray slate	15	285
White sand	15	300
Black slate	30	330
White sand	15	345
White slate	25	370
Sand, hard	...	......
White sand	....	400
Black slate	145	545
White sand	5	550
Sand, hard	15	565
White slate	85	650
Gray sand	10	660
Black slate	5	665
Sand	65	730
Gray sand	40	770
White sand	30	800
Gray sand	5	805
White sand	27	832
MISSISSIPPIAN SYSTEM.		
White slate	33	865
"Big lime"	112	977
Black slate	7	984
White sand	46	1030
White slate	170	1200
Slate	70	1270
White lime	10	1280
White slate	45	1325
White lime	15	1340
Gray sandy slate	60	1400
Black slate	35	1435
Brown shale (Sunbury?)	17	1452
Gray sand (Berea ?)	18	1470
Black slate	2	1472
Gray lime	2	1474

White slate	3	1477
Gray lime	5	1482
White slate	10	1492
Gray lime—Oil show	20	1512
White slate	6	1518
Gray lime	67	1585
White slate	10	1595
DEVONIAN SYSTEM.		
Black slate	95	1690
White slate	50	1740
Black slate	200	1940
White slate	232	2172
White lime and dark slate	8	2180
"Ragland" sand (?)—Oil and gas show		

LOG No. 166.

GUFFEY WELL.

Near Grayson.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	28	28
Black slate	30	58
Sand	12	70
MISSISSIPPIAN SYSTEM.		
Black slate	10	80
"Big lime"	20	100
Green sandy shale (Waverly)	230	330
Gray slate and sand shells (Waverly)	270	600
Sandy and shale (Waverly)	50	650
Sand, slate and shells (Waverly)	85	735
Black slate (Sunbury)	22	757
Sand—Oil and gas (Berea)*	112	869
Gray slate	25	894
Red slate	6	900
DEVONIAN SYSTEM.		
Black slate	116	1016
White slate	5	1021
Black slate	169	1190
White slate	20	1210
Black slate	95	1305
White slate	118	1423
Lime—Ragland sand—Oil and gas show	2	1425
Lime—Salt water at 1475	55	1480

*Only upper part in Berea.

(This record is very irregular).

LOG No. 167. CATHERINE GREGORY FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	10	10
Blue shale	15	25
White lime—"Big lime"	20	45
White sand	115	160
Blue shale	320	480
White shale	180	660
White sand	108	768
White lime	60	828
Blue shale	30	858
DEVONIAN SYSTEM.		
Black shale (Devonian)	260	1118
White shale (Devonian)	12	1130
Black shale (Devonian)	40	1170
White shale (Devonian)	90	1260
Lime—Ragland sand?	70	1330
SILURIAN SYSTEM.		
White lime	110	1440
White sand	10	1450
White lime	40	1490
White sand	60	1550
Red rock	49	1599

LOG No. 168. RICE OIL COMPANY.
JEFF RIFFE FARM,
Two Miles N. E. of Webbville.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	30	30
Light slate	30	60
Sand, hard	40	100
Black slate	190	290
Sand	10	300
Black shale	40	340
Sand	5	345
White slate	30	375
Sand, hard	25	400
Black slate	150	550
Sand, hard	10	560
White slate	90	650
Sand, hard	10	660
Black slate	70	730
Sand, hard	45	775
Sand	30	805
Sand, hard	5	810
Sand	25	835

MISSISSIPPIAN SYSTEM.			
Slate		35	870
Lime	(Cased at 885) "Big lime"	55	1035
Slate		5	980
Lime		105	975
White slate		240	1275
Lime (?)		5	1280
Slate		45	1325
Lime (?)		20	1345
White slate		55	1400
Black slate		55	1455
Berea Grit (?)		25	1470
Broken lime and slate		25	1495
Lime (?)		15	1510
Slate		10	1520
Lime (?)		70	1590
Slate		15	1605
DEVONIAN SYSTEM.			
Black slate	(Devonian)	90	1695
White slate		50	1745
Black slate		200	1945
Light slate		255	2200
Sandy lime—hard (Corniferous)		47	2247

LOG No. 169.

WELL AT SOLDIER.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	5	5
Shale	128	133
Sand	307	440
DEVONIAN SYSTEM.		
Black shale	187	627
"Oil sand."		

LOG No. 170.

WELL NEAR DENTON.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	5	5
Quicksand	65	70
Lime (?)	80	150
Shale	50	200
White sand	50	250
Shale	50	300
Sand (base of Pottsville)	20	500

LOG No. 167. CATHERINE GREGORY FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	10	10
Blue shale	15	25
White lime—"Big lime"	20	45
White sand	115	160
Blue shale	320	480
White shale	180	660
White sand	108	768
White lime	60	828
Blue shale	30	858
DEVONIAN SYSTEM.		
Black shale (Devonian)	260	1118
White shale (Devonian)	12	1130
Black shale (Devonian)	40	1170
White shale (Devonian)	90	1260
Lime—Ragland sand?	70	1330
SILURIAN SYSTEM.		
White lime	110	1440
White sand	10	1450
White lime	40	1490
White sand	60	1550
Red rock	49	1599

LOG No. 168. RICE OIL COMPANY.
JEFF RIFFE FARM,
Two Miles N. E. of Webbville.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	30	30
Light slate	30	60
Sand, hard	40	100
Black slate	190	290
Sand	10	300
Black shale	40	340
Sand	5	345
White slate	30	375
Sand, hard	25	400
Black slate	150	550
Sand, hard	10	560
White slate	90	650
Sand, hard	10	660
Black slate	70	730
Sand, hard	45	775
Sand	30	805
Sand, hard	5	810
Sand	25	835

MISSISSIPPIAN SYSTEM.			
Slate		35	870
Lime	(Cased at 885) "Big lime"	55	1035
Slate		5	980
Lime		105	975
White slate		240	1275
Lime (?)		5	1280
Slate		45	1325
Lime (?)		20	1345
White slate		55	1400
Black slate		55	1455
Berea Grit (?)		25	1470
Broken lime and slate		25	1495
Lime (?)		15	1510
Slate		10	1520
Lime (?)		70	1590
Slate		15	1605
DEVONIAN SYSTEM.			
Black slate	(Devonian)	90	1695
White slate		50	1745
Black slate		200	1945
Light slate		255	2200
Sandy lime—hard (Corniferous)		47	2247

LOG No. 169.

WELL AT SOLDIER.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	5	5
Shale	128	133
Sand	307	440
DEVONIAN SYSTEM.		
Black shale	187	627
"Oil sand."		

LOG No. 170.

WELL NEAR DENTON.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	5	5
Quicksand	65	70
Lime (?)	80	150
Shale	50	200
White sand	50	250
Shale	50	300
Sand (base of Pottsville)	20	500

MISSISSIPPIAN SYSTEM.		
"Big lime"	90	590
"Waverly"	390	980
Black shale (Sunbury)	90	1070
"Berea sand"*	100	1170
DEVONIAN SYSTEM.		
Black shale	500	1670
Blue shale	100	1770
"Clinton"*	70	1840

*Driller's distinction.

LOG No. 171.

STRAIGHT CREEK COAL CO. WELL NEAR DENTON.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	20	20
White sandy shale	60	80
White slate	20	100
Brown sand	58	158
Coal	2	160
Lime (?) and sand	110	270
Shale	46	316
Lime	30	346
White slate	10	356
Sand, hard	9	365
Coal.		
White sand	60	425
Black slate	10	435
White lime	15	450
White sand	60	510
MISSISSIPPIAN SYSTEM.		
White slate	14	524
White sand	46	570
Lime (?)	109	679
White shale	443	1122
Lime (?)	125	1247
White slate	28	1275
DEVONIAN SYSTEM.		
Brown shale	447	1722
Lime and shale	40	1762
White shale	68	1830
White lime	80	1910
White shale	10	1920
White lime	95	2015

CHRISTIAN COUNTY.

LOG No. 172.

WELL ONE MILE SO. OF HOPKINSVILLE.

Partial record. From drillings.

MISSISSIPPIAN SYSTEM.

At 25, 35 and 65—Light colored oolitic lime.
At 85—White oolitic lime.
At 95, 122, 140, 175, 195, 220, 255 and 280—Light gray lime.
At 315 and 365—Dark gray lime.
At 380, 390 and 415—Light gray lime.
At 435, 455, 465, 495, 500, 520, 540 and 555—Very dark lime.
At 575—Gray lime.
At 585—Brown lime.
At 606, 620 and 630—Gray lime.
At 652 and 680—Black lime.
At 690, 700, 725, 740 and 750—Gray lime.
At 780—Black lime.
At 800, 810, 850, 860 and 875—Gray lime.
At 911, 920 and 930—Black lime.
At 950—Gray lime.
At 975 and 1015—Black lime.
At 1060 to 1440—Black shale.
At 1480—Gray lime.

DEVONIAN SYSTEM.

At 1520, 1530 and 1555—Black shale.
At 1560—Gray lime.
At 1565, 1570 and 1585—White lime.
At 1610 and 1612—Light colored lime.
Oil shows at 25 and 555.

CLAY COUNTY.

LOG No. 173.

Nancy Potter, No. 1, on Blue Salt Run, a Branch of Goose Creek. 8 Miles west of Manchester. La Salle Oil Co., Operators. Elevation about 950 feet.

	Thickness	Depth	
PENNSYLVANIAN SYSTEM.			
Soil	9	9	
Shell	3	12	
Gravel	6	18	
Sand	4	22	
Coal	5	27	
Dark shale	131	158	
Hard sand	106	264	
Brown shale	10	274	
Sand	146	420	Base of Conglomerate

MISSISSIPPIAN SYSTEM.			
Dark shale	30	450	
Dark lime	10	460	
Light shale	25	485	
Red rock	15	500	
Slate	50	550	
Red rock	5	555	
Light shale	5	560	
Big lime	240	800	Gas at 700
Big Injun	55	855	Waverly
Red rock	7	862	
Dark shale	528	1190	
DEVONIAN SYSTEM.			
Black shale	135	1325	Devonian black shale
Light shale	25	1350	Gas at 1350
Black shale	10	1360	
Black lime	5	1365	
Brown shale	35	1400	
Gray lime, hard	15	1415	Base of Devonian
SILURIAN SYSTEM.			
Blue slate	5	1420	Silurian
White slate	85	1505	
Red rock	5	1510	
Blue slate	25	1535	
Dark sand	10	1545	
Green slate	115	1660	
ORDOVICIAN SYSTEM.			
Brown lime	10	1670	Ordovician
Green slate	25	1695	
Soft white lime	5	1700	
Green slate	10	1710	
Red rock	20	1730	
Green slate, very hard	12	1742	
Gray lime, hard	18	1760	
Slate and shells	20	1780	
Gray slate	50	1830	
Gray lime	20	1850	
Lime, shells, slate	25	1875	
Lime and flint with flakes of slate	15	1890	
Lime, flint	170	2060	
Gray lime	40	2100	
Lime and slate	60	2160	Trenton
Blue slate	30	2190	
Gray lime, dark	15	2205	

LOG No. 174. DIAMOND DRILL HOLE.
Mouth of Big Creek.
Approximate Elevation 810 ft. A. T.

PENNSYLVANIAN SYSTEM.	Thickness Feet	In.	Depth Feet	In.
Sand and gravel	10	0	10	0
Sandstone	42	0	52	0
Slate	1	4	53	4
Coal	0	4	53	8
Slate	4	10	58	6
Sandstone	36	6	95	0
Gray slate	4	0	99	0
Coal	2	2	101	2
Fire clay	0	10	102	0
Sandstone	4	0	106	0
Slate	25	0	131	0
Sandstone	15	4	146	4
Slate	8	8	155	0
Gray shale	47	6	202	6
Coal	1	6	204	0
Fire clay	1	0	205	0
Sandy shale	10	0	215	0
Gray shale	13	10	228	10
Bony coal	0	5	229	3
Sandstone	23	9	253	0
Sandy shale	6	3	259	3
Slate	1	9	261	0
Black shale	32	7	293	7
Sandstone	2	5	296	0
Black shale	6	3	302	3
Sandy shale	12	1	314	4
Black shale	38	8	352	0
Sandy shale	18	4	371	4
Black shale	13	2	384	6
Coal	0	4	384	10
Shale	0	2	385	0
Coal	1	6	386	6
Fire clay	2	9	389	3
Coal	0	3	389	6
Shale	2	0	391	6
Coal	0	2	391	8
Shale	2	0	393	8
Coal	0	2	393	10
Sandy shale	7	2	401	0
Sandstone	19	0	420	0
Sandy shale	11	6	431	6
Black shale	9	6	441	0

Sandstone	22	0	463	0
Sandy shale	4	0	467	0
Sandstone	35	6	502	6
Conglomerate	0	6	503	0
Black shale	7	8	510	8
Sandstone	65	4	576	0
Coal	0	6	576	6
Sandstone	4	4	580	10
Sandy shale	0	10	581	8
Sandstone	2	6	584	2
Sandy shale	1	0	585	2
Sandstone	35	4	620	6
Sandstone and coal	2	7	623	1
Sandy shale	11	11	635	0
Sandstone	41	0	676	0
Hard white stone	41	0	717	0
Hard broken stone	5	0	722	0
Dark shale	1	3	723	3
Hard broken sandstone	24	5	747	8
Coal	0	1	747	9
Sandstone	62	7	810	4
Conglomerate	1	8	812	0
Black slate	0	1	812	1
Coal	0	9	812	10
Conglomerate	1	2	814	0
Flint clay	3	0	817	0
Sandy shale	12	0	829	0
White sandstone	6	0	835	0
Sandy shale	6	4	841	4
Black slate	1	6	842	10
Sandy shale	9	8	852	6
White sandstone	12	0	864	6
Dark shale	0	6	865	0
Broken white stone	2	0	867	0
Sandstone	29	4	896	4
Conglomerate	0	2	896	6
Slate	3	8	900	2
Coal	0	10	901	0
Flint clay	1	0	902	0
Sandstone	4	6	906	6
Dark slate	10	6	917	0
Shale	5	0	922	0
Sandy shale	5	0	927	0
White sandstone	28	0	955	0
Hard white stone	7	0	962	0
Sandstone	47	0	1009	0

Well begins about 350 feet below the Fire clay coal and is all in the Pottsville.

CLINTON COUNTY.

LOG No. 175.

SARAH SIDWELL FARM.

Strata	Depth
MISSISSIPPIAN SYSTEM.	
Top of well	0
DEVONIAN SYSTEM.	
Top of black shale (Devonian)	350
Bottom of black shale	380
Lime—Gas and oil show at 649	380 to 1150

W. J. WILLIAMS FARM.

Strata	Depth
MISSISSIPPIAN SYSTEM.	
Top of well	0
DEVONIAN SYSTEM.	
Top of black shale (Devonian)	330
Bottom of black shale (Devonian)	355
Lime—Oil show 836 to 854.	

CUMBERLAND COUNTY.

LOG No. 176.

WM. HURT FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Blue lime	60	60
Gray lime—Gas	125	185
Gray lime	140	325
Black lime—Gas	45	370
Gray lime	105	475
Gray lime—Gas	30	505
Black lime	40	545
White lime	90	635
Gray lime	215	850
Gray lime—Oil and gas show	65	915
Gray lime	340	1255
White lime	7	1262

LOG No. 177.

WM. HURT FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Blue lime	300	300
Gray lime	100	400
Black lime	220	620
Gray lime—Pencil cave at 625	30	650
White lime	70	720
Gray lime	280	1000

LOG No. 178.

A. M. FUDGE FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Blue lime—Gas at 150	200	200
Black lime—Gas at 285—Oil show at 452	255	455
Gray lime	115	570
Black lime—Flowing oil at 635	65	635
Gray lime—Pencil cave at 645	365	1000

LOG No. 179.

WM. BRYANT FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
White lime	50	50
Blue lime—Gas at 225	200	250
Gray lime	50	300
Blue lime	75	375
Gray lime	200	575
Dark gray lime—Pencil cave at 600	50	625
White lime	100	725
Gray lime	307	1032

LOG No. 180.

WM. BRYANT FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Blue lime	100	100
Black lime	380	480
White lime—Gas show	20	500
Brown lime	20	520
White lime	20	540
Brown lime	20	560
White lime	15	575
Gray lime	83	658
Pencil cave	2	660
White lime	90	750
Brown lime	360	1110
Gray lime	270	1380
Brown lime	20	1400

LOG No. 181.

B. F. IRVINE FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Blue lime—Oil show	75	75
Black lime—Salt water	125	200
Gray lime—Sulphur water	200	400
White lime—Salt water	40	440
Gray lime—Fresh water	20	460
Black lime—Gas	60	520
Gray lime—Pencil cave	50	570
Gray lime—Bitter water	40	610
Gray lime—Salt water	65	675
White lime—Salt water	75	750
Gray lime—Salt water	250	1000

LOG No. 182.

ELLEN SMITH FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Soil	10	10
Blue lime	90	100
Black lime	20	120
Gray lime—Gas at 135	72	192
Brown lime—Gas at 220	60	252
Black lime	150	402
Gray lime	108	510
Black lime—Gas at 520	80	590
Green pencil cave	3	593
Brown lime—Oil show at 975	388	981
Gray lime	6	987
Brown lime	18	1005

LOG No. 183.

CLOYD HEIRS FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Soil	42	42
Blue lime	160	202
Black lime	30	232
Gray lime	40	272
Brown lime	30	302
Gray lime	75	377
Brown lime	70	447
Black lime—Gas at 445	48	495
Brown lime	7	502
Green pencil cave	2	504

Brown lime	341	845
Gray lime	18	863
Brown lime	157	1020
Gray lime	60	1080
Brown lime	40	1120
Black lime	80	1200
Brown lime	60	1260
Gray lime	60	1320
Brown lime	20	1340
White lime	20	1360
Brown lime	30	1390
White lime	30	1420
Gray lime	80	1500

LOG No. 184.

J. E. HEARD FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Gray lime	270	270
Brown lime	55	325
Gray lime	75	400
Brown lime	48	448
Gray lime—Gas at 448	44	492
Dark blue lime—Oil show at 492	12	504
Gray lime—Oil show at 505	12	516
Green pencil cave	3	519
Gray lime	6	525
Brown lime—Gas at 525	24	549
Gray lime	60	609
Brown lime	29	638
Dark blue lime	15	653
Gray lime	32	685
Brown lime	215	900
Gray lime	40	940
Brown lime	60	1000

LOG No. 185.

J. E. HEARD FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Blue lime	300	300
Gray lime	100	400
Black lime	100	500
Gray lime	25	525
Pencil cave	10	535
Gray lime	468	1003

Oil at 603, 671, 701 and 910.

LOG No. 186.

J. E. HEARD FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Blue lime	260	260
Gray lime	103	363
Brown lime	33	396
Gray lime	129	525
Black lime	30	555
Lime and sand	18	573
Green pencil cave	2	575
Brown lime	30	605
Gray lime	18	623
Lime and sand—Oil show at 654	47	670
Brown lime	45	715
Gray lime	43	758
Brown lime	42	800

LOG No. 187.

J. E. HEARD FARM.

ORDOVICIAN SYSTEM.

Strata	Thickness	Depth
Blue lime	75	75
Gravel (?)	3	78
Blue lime	80	158
Black lime	50	208
Gray lime	30	238
Blue lime	45	283
Lime and sand—Heavy gas flow at 290	15	298
Brown lime	140	438
Gray lime	55	493
Black lime	30	523
Lime and sand	9	532
Green pencil cave	3	535
Brown lime	30	565
Green lime	56	621
Brown lime—Oil at 643	43	664

LOG No. 188.

J. E. HEARD FARM.

ORDOVICIAN SYSTEM.

Strata	Thickness	Depth
Blue lime	60	60
Black lime	30	90
Gray lime	60	150
Blue lime	70	220
Lime and sand	65	285
Brown lime—Gas at 290	110	395

Gray lime	75	470
Black lime	30	500
Lime and sand	10	510
Green pencil cave	3	513
Brown lime—Gas at 520	25	538
Lime and sand—Gas at 555	17	555
Brown lime	167	722

Oil at 567, 629 and 712. Gas at 625 and 685.

LOG No. 189.

J. E. HEARD FARM.

ORDOVICIAN SYSTEM.

Strata	Thickness	Depth
Blue lime	100	100
Gray lime—Gas at 408	350	450
Black lime	40	490
Pencil cave	10	500
Gray lime—Oil show at 532 and 765	401	901

LOG No. 190.

J. E. HEARD FARM.

ORDOVICIAN SYSTEM.

Strata	Thickness	Depth
Blue lime	200	200
Gray lime	200	400
Black lime	100	500
Gray lime	280	780

Pencil cave at 525. Oil at 553 and 756.

LOG No. 191.

J. E. HEARD FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Soil	54	54
Blue lime	80	134
Gray lime	30	164
Blue lime	36	200
Black lime—Gas at 250	50	250
Blue lime—Gas at 310	60	310
Brown lime	100	410
Blue lime	35	445
Black lime—Oil at 445	30	475
Gray lime	5	480
Green pencil cave	3	483
Brown lime	29	512
Sandy lime—Oil at 561	49	561
Lime	244	805

LOG No. 192.

J. W. CLOYD FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Lime	350	350
Gray sand (?)	125	475
Lime	33	508
White slate	2	510
White lime—Oil show at 522	190	700
Sand ?)	150	850
Gray lime	30	880
White slate	10	890
Dark lime	35	925
White lime	25	950

LOG No. 193.

W. R. NEELY FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Soil	8	8
Blue lime	142	150
Black lime	132	282
Gray lime	18	300
Brown lime	80	380
Gray lime	50	430
Brown lime	42	472
Black lime	53	525
Gray lime and sand	10	535
Pencil cave	2	537
Gray lime	4	541
Brown lime	100	641
Lime and sand	50	691
Brown lime	183	874

LOG No. 194.

W. J. HUTCHINS FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Blue lime—Gas at 80	80	80
Gray lime	120	200
Brown sand	6	206
Gray sand	7	213
Black lime	6	219
Brown sand	6	225
Black lime—Gas at 325	305	530
Brown lime	75	605

Gray lime	30	635
Black lime	20	655
Gray lime	11	666
Green pencil cave	3	669
Brown lime	331	1000

LOG No. 195.

A. W. BRYANT FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Soil	10	10
Blue lime	100	110
Black lime	20	130
Gray lime	12	142
Black lime	135	277
Blue lime	130	407
Black lime	80	487
Brown lime—Oil at 555	88	575
Black lime	83	658
Green pencil cave	2	660
Brown lime	40	700
Brown sand (?)	85	785
Brown lime	279	1064
Black lime	15	1079
Brown lime	156	1235
White lime	115	1350
Brown lime	41	1391
Brown sand (?)—Oil show at 1391	30	1421
White flint	40	1461
Brown lime	89	1550
Gray lime	60	1610
Brown lime	70	1680

LOG No. 196.

WELL AT NEELY'S FERRY,
3 1-2 Miles below Burksville.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Red clay	25	25
Gray lime	190	215
Blue slate	35	250
Brown lime	200	450
Black lime—Pencil cave at 621	215	665
Brown lime	74	739
Black lime	21	760
Gray lime	5	765

LOG No. 197.

WELLS AT SALT LICK BEND (PARTIAL RECORDS).

GRAVES FARM.

ORDOVICIAN SYSTEM.	Depth
Oil at	519
Bottom at	625

LOG No. 198.

CLAY CLOYD FARM.

ORDOVICIAN SYSTEM.	Depth
Oil at	650 and 825
Bottom at	960

LOG No. 199.

RICHARDSON FARM.

ORDOVICIAN SYSTEM.	Depth
Oil and salt water at	440
Oil at	609 and 675
Bottom at	700

LOG No. 200.

RICHARDSON FARM.

ORDOVICIAN SYSTEM.	Depth
Oil at	390 and 600
Pencil cave at	475
Gas at	520
Bottom at	720

LOG No. 201.

R. B. CLOYD FARM.

ORDOVICIAN SYSTEM.	Depth
Oil at	305 and 540
Gas at	730
Oil and gas	732
Oil at	769
Gas at	800
Bottom at	839

LOG No. 202.

R. B. CLOYD FARM.

ORDOVICIAN SYSTEM.	Depth
Pencil cave at	470
Oil at	566 and 586
Bottom at	705

LOG No. 203.

R. B. CLOYD FARM.

ORDOVICIAN SYSTEM.	Depth
Pencil cave at	520
Oil at	641
Bottom at	711

LOG No. 204.

McCOMAS FARM.

ORDOVICIAN SYSTEM.	Depth
Oil at	548

LOG No. 205.

GARMON FARM.

ORDOVICIAN SYSTEM.	Depth
Gas at	37, 180 and 205
Pencil cave at	542
Bottom at	910

LOG No. 206.

D. W. CLOYD FARM.

ORDOVICIAN SYSTEM.	Depth
Oil at	90
Salt water at	430
Pencil cave at	480
Oil at	518 and 597

LOG No. 207.

D. W. CLOYD FARM.

ORDOVICIAN SYSTEM.	Depth
Oil at	435
Pencil cave at	475
Bottom at	800

LOG No. 208.

WELLS ON MARROWBONE CREEK.

J. E. TAYLOR FARM.

ORDOVICIAN SYSTEM.	Depth
Oil at	248
Bottom at	258

LOG No. 209.

McCOMAS FARM.

ORDOVICIAN SYSTEM.	
Oil at	520
Oil show at	594
Bottom at	615

LOG No. 210.

McCOMAS FARM.

ORDOVICIAN SYSTEM.	Depth
Oil shows at	180, 245 and 750 to 810
Gas show at	740
Bottom at	875

LOG No. 211.

COLLINS FARM.

ORDOVICIAN SYSTEM.	
Gas at	95, 105, 165 and 210
Pencil cave at	612
Bottom at	740

LOG No. 212.

ALEXANDER FARM.

ORDOVICIAN SYSTEM.	
Gas at	172, 315, 380 and 580
Pencil cave at	620
Bottom at	705

LOG No. 213.

BUCHANNON FARM.

ORDOVICIAN SYSTEM.	
Gas at	110, 150 and 225
Pencil cave at	545

LOG No. 214. WELLS IN WASH'S BOTTOM.

R. G. ALLEN FARM.

ORDOVICIAN SYSTEM.	
Oil at	640
Bottom at	805

LOG No. 215.

PHILPOT FARM.

ORDOVICIAN SYSTEM.	
Oil at	500 and 625
Bottom at	665

LOG No. 216.

GOFF FARM.

ORDOVICIAN SYSTEM.	
Oil at	765
Bottom at	785

LOG No. 217.

STOCKDEN FARM.

ORDOVICIAN SYSTEM.	
Oil show at	545
Bottom at	800

LOG No. 218.

OLD CUMBERLAND COUNTY WELLS.*

Name	Depth	Date
Garbert, opposite Creelsboro	225	1861

LOG No. 219.

Crocus, mouth of Crocus creek	190	1865

LOG No. 220.

Egbert	270	1865

LOG No. 221.

Old American, Renox creek	171	1829

LOG No. 222.

Sherman	276	1866

LOG No. 223.

Gilbreath, Bear creek	20	

LOG No. 224.

Phe'ps, Oil fork	50	1866

DAVIESS COUNTY.

LOG No. 225.

MACEO WELL (PARTIAL RECORD).

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM and MISSISSIPPIAN SYSTEM.		
Unrecorded.		
		2300
Black shale	45	2345
Dark impure limestone	255	2600
Hard black shale	106	2706
Gray calcareous shale	30	2736
DEVONIAN SYSTEM.		
Black shale	474	2810
Gray limestone	15	2825
Very light limestone	33	2858
Gray limestone	87	2945
White limestone	15	2960
Gray limestone	104	3064
Yellow limestone	81	3145
Dark gray limestone	15	3160
(Base of Devonian indefinite.)		

*The dates and depths of these wells are not vouched for but are given as commonly reported.

LOG No. 226

S. T. LOGSDON FARM.

Panther Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	28	28
White sand	2	30
Blue clay	110	140
Coal	1	141
Sand, hard	9	150
Black shale	70	220
Sand, hard	10	230
Slate	85	315
Sand	80	395
Slate	80	475
Sand	10	485
Slate	70	555
Red rock	10	565
Black slate	55	620
Sand	10	630
Slate	100	730
Sand	20	750
Sandy shale	20	770
Blue slate	65	835
White slate	35	870
Black slate	20	890
Sand	25	915
Blue slate	35	950
Sandy shale	10	960
Slate	12	972
Sand	8	980
White slate	20	1000
Gray slate	8	1008
Lime	22	1030
White slate	10	1040
Sand	10	1050
Blue slate	65	1115
Lime	85	1200
Slate	50	1250
Sand	25	1275
Slate	155	1430
Sand	30	1460
Sand	20	1480

MISSISSIPPIAN SYSTEM.		
Lime	90	1570
Red rock	30	1600
Slate	60	1660
Sand	50	1710
Lime	30	1740
Slate	10	1750
Sand	12	1762
Lime—Cased at 1762	4	1766
Sand	10	1776

LOG. No. 227. O. T. GORE FARM.
1⅛ miles S. E. of Utica.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	30	30
Shale with breaks	57	87
Sand	50	137
Shale with breaks	423	560
Slate	10	570
Shale with breaks	70	640
Sand	50	690
Slate	6	696
Sand	44	740
Slate	23	763
Sand	30	793
Slate	11	804
Sand	32	836
Slate	32	868
Sand	36	904
Slate	25	929
Sand	31	960
Slate	18	978
Sand	22	1000
Slate	23	1023
Sand	20	1043
Slate	7	1050
Sand	20	1070
Slate	20	1090
Sand	30	1120
Slate	5	1125
Sand	5	1130
Sand	10	1140
Sand	80	1220
Slate	10	1230
Sand	70	1300
Slate	10	1310

MISSISSIPPIAN SYSTEM.

Red Lime	10	1320
White lime	220	1540
Sandy lime	99	1639
Sand	6	1645
Lime	50	1695
Sand	5	1700
Lime	50	1750
Sand	50	1800
Lime	1020	2820
Brown sand	80	2900
White slate	20	2920
Lime	60	2980
White slate	40	3020
Brown Sand	60	3080
Lime	50	3130
Sand with lime shells	220	3350
Lime	75	3425
Sand	10	3435
White Lime	35	3470

EDMONSON COUNTY.

LOG. No. 228.

RHODA WELL

(Partial record).

Top of Devonian shale at	1020
Base of Devonian shale at	1136
Dark and gray lime	1136 to 1210
Gray sand (lime)—oil	1210 to 1228
Dark and gray lime	1228 to 1320
Brown lime—Gas	1320 to 1325
Dark brown lime	1325 to 1370
Dark lime or shale	1370 to 1407

ELLIOTT COUNTY.

LOG. No. 229.

J. F. DIALS FARM.

Isonville.

Strata	Thickness	Depth
Quicksand	25	25
PENNSYLVANIAN SYSTEM.		
Slate	115	140
Sand	30	170
Slate—Cased at 180	10	180
Dark sand	20	200

MISSISSIPPIAN SYSTEM.		
Slate	40	240
White lime—"Big lime"—Gas at 338	150	390
Dark sand (Probably Big Injun)	15	405
Slate and shell—Cased at 560	225	630
Lime	40	670
Gray sand—Gas at 715	80	750
Slate	20	770
Sand	95	865
Slate and shell	29	894
DEVONIAN SYSTEM.		
Black shale	376	1270
White slate	77	1347
Sandy lime	35	1382
Gas at 1348		
Strong gas at 1366		
Bottom of well at		1500

LOG No. 230. JESS PETERS FARM.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	19	19
Slate	156	175
Lime	25	200
Sand	100	300
Slate	10	310
Sand	20	330
MISSISSIPPIAN SYSTEM.		
Slate	38	368
"Big lime"	140	508
Slate	207	715
Lime	68	783
Sand—Oil show	53	836

ESTILL COUNTY.

LOG No. 231.

WELL AT MOUTH OF RED CREEK.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	38	38
DEVONIAN SYSTEM.		
Black shale	55	93
Corniferous lime	7	100
Blue shale	10	110
Yellow sandrock (?)	40	150
Soapstone	38	188
Pink shale	22	210

LOG No. 232.

TOM WEST FARM. MILLERS CREEK.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	28	28
Blue shale	7	35
DEVONIAN SYSTEM.		
Black shale (Devonian)	58	93
Brown shale (Devonian)	51	144
White shale (Devonian)	2	146
Brown lime—Ragland sand	4	150
Lime	88	238
Blue shale	49	287
Pink shale	46	333
Blue shale	40	373
Hard shell	4	377
Blue shale	8	385
Pink shale	18	403
Hard shell	4	407
Blue shale	8	415
Lime shell	2	417
Blue shale	8	425
Lime	3	428
Blue shale	2	430
Red rock	4	434
Lime	4	438
Blue shale	5	443
Lime	2	445
Blue shale	2	447
Lime	18	465
Gray lime	18	483
Blue shale	12	495
Lime	45	540
Blue shale	6	546
Lime	59	605

LOG No. 234.

ROLAND ISAACS. DRILLED 1918

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay and black soil	15	15
Lime	141	156
Blue shale	456	612

DEVONIAN SYSTEM.		
Black shale	110	722
Fire clay	4	726
Black shale hard	4	730
Break (blue shale)	4	734
Top of cap		734
Cap hard	1½	735½
Pay good oil show might have paid with shot	4	739½
Pay fair oil show might have paid with shot	1	740½
Rusty lime	1	741½
Gray lime	1	742½
Rusty gray lime	1	743½
Light gray lime	3	746½
Dark gray lime	1	747½
Light gray lime	1	748½
Dark gray lime	4	752½
Dark gray lime—Watery	3	755½
Dark gray lime	4	759½
Dark brown lime—Oil production 20 bbls.	3½	763
Dark gray lime	1	764
Light gray lime	½	764½
Bottom	764½	764½

LOG No. 235.

ADAM WALLING WELL.

Lucky Star Oil Company. White Oak Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	19	19
Shale	6	25
Lime	20	45
Blue slate	25	70
Lime	10	80
Blue slate	25	105
Lime shale	2	107
Blue slate	353	460
DEVONIAN SYSTEM.		
Black shale	103	563
"Fire clay" (White shale)	3	566
Irvine sand	35	601
Slate	10	611
Lime	10	621
Blue slate—Cased at 675	79	700
Lime	10	710
Blue slate	106	816

Red slate and shells	19	835
Hard white lime	10	845
Lime with slate breaks	295	1140
Sandy lime	10	1150
Soft lime and shells	50	1200
Hard lime	150	1350
Soft lime and shells—Gas at 1885	550	1900
Hard lime and hard shells	574	2474
Sand—Water at 2533—Gas at 2520	80	2554
Lime	16	2570
Sandy lime—water at 2600	40	2610
Lime	80	2690
Sandy lime—water rose 2100 feet	35	2725
Lime	5	2730

LOG No. 236.

COMBINED SECTION FROM BOTTOM OF OLD GAS WELL ON WHITE OAK CREEK TO TOP OF RIDGE.

Strata		Thickness	Depth
PENNSYLVANIAN SYSTEM.			
Massive sandstone to top of ridge	(Pottsville)	196	944
Shales and shaly sandstone		50	748
Black slate		4	698
Coal		1	694
Gray shale		4	693
Coal		1	689
Shales		15	688
MISSISSIPPIAN SYSTEM.			
Buff, earthy limestone		8	673
"Archimedes" limestone		2	665
Gray limestone		13	663
Calcareous shale		10	650
Oolitic limestone		10	640
Buff limestone		11	630
Oolitic limestone		22	619
Gray limestone		12	597
Earthy, buff limestone		5	585
Gray, cherty limestone		24	580
Massive limestone		22	556
Blue limestone and shale		38	534
Earthy, yellow limestone		6	496
Sandstone and shales (Waverly)		490	490
Top of well			0

DEVONIAN SYSTEM.		
Black shale	125	125
Lime—Ragland sand	25	150
SILURIAN SYSTEM.		
Blue and gray shales	145	295
Gray lime	30	325
Gray shale	10	335
Gray lime	8	343
Red lime	10	353
Gray lime	17	370
Brown lime	40	410
ORDOVICIAN SYSTEM.		
Gray lime	839	1249
Greenish-white sandy shale (top of Tyrone)	10	1259
Hard dove-colored limestone	425	1684
Hard gray limestone	145	1829
White, fine grained, sandy lime (Calciferous)	15	1844
Gas in Calciferous at about 1940.		

LOG No. 237.

BICKNELL WELL.
Locust Branch of Red Lick.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Soil	8	8
Black shale	103	111
Corniferous lime	8	119
Shale	64	183
Lime	6	189
Shale	14	203
Bottom of well at		238

LOG No. 238.

GENTRY WELL.
Locust Branch of Red Lick.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Soil	9	9
Black shale	90	99
Blue shale	99	198
Bottom of well at—salt water (Corniferous missing)		268

LOG No. 239. REAVES WELL.
Locust Branch of Red Lick.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Soil	8	8
Black shale	54	62
Corniferous lime	8	70
Blue shale	64	134
Lime	6	140
Blue shale	19	159
Bottom of well at		575

LOG No. 240. DAN MILLER FARM—No. 5.
Middle Fork of Station Camp Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	22	22
Light shale	50	72
DEVONIAN SYSTEM.		
Black shale	98	170
White clay (Devonian)	6	176
"Cap rock"	1	177
"Oil sand"—Oil	3	180

LOG No. 241.
DAN MILLER FARM—No. 6.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	14	14
Light shale	16	30
DEVONIAN SYSTEM.		
Black shale	100	130
White clay (Devonian)	7	137
"Cap rock"	1	138
"Oil sand"—Oil	5	143

LOG No. 242.
DAN MILLER FARM—No. 7.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	25	25
Light shale	17	42
DEVONIAN SYSTEM.		
Black shale	98	140
White clay (Devonian)	8	148
Black shale	2	150
"Cap rock"	1	151
"Oil sand"—Oil	3	154

LOG No. 243.

DAN MILLER FARM—No. 8.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	14	14
Light shale	13	27
DEVONIAN SYSTEM.		
Black shale } (Devonian)	100	127
White clay } (Devonian)	7	134
"Oil sand"—Oil	2	136

LOG No. 244.

WM. COX FARM.
Middle Fork of Station Camp Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	8	8
Blue shale	84	92
DEVONIAN SYSTEM.		
Black shale } (Devonian)	102	194
White clay } (Devonian)	8	202
Black shale } (Devonian)	4	206
"Oil sand"	19	225

LOG No. 245.

CHARLES COX FARM—No. 6.
Midd e Fork of Station Camp Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	10	10
Light shale	9	19
Blue shale	112	131
Sand	11	142
Blue shale	27	169
DEVONIAN SYSTEM.		
Black shale } (Devonian)	100	269
White clay } (Devonian)	8	277
"Cap rock"	1	278
"Oil sand	3	281

LOG No. 246.

CHARLES COX FARM—No. 7.

MISSISSIPPIAN SYSTEM.

Strata	Thickness	Depth
Soil	20	20
Light shale	6	26
Blue shale	10	36
Shell	2	38
Sand	3	41
Blue shale	20	161
DEVONIAN SYSTEM.		
Black shale (Devonian)	103	164
White clay (Devonian)	9	173
"Cap rock"	1	174
"Oil sand"	11	185

LOG No. 247.

CHARLES COX FARM—No. 10.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Sand	25	25
Blue shale	65	90
Shell	3	93
Blue shale	38	131
Shell	2	133
Sand	10	143
Blue shale	30	173
Sand	8	181
Soft rock	18	199
Blue shale	45	244
Shell	6	250
Shale	20	270
DEVONIAN SYSTEM.		
Black shale (Devonian)	101	371
White clay (Devonian)	7	378
"Cap rock"	1	379
"Oil sand"	3	382

LOG No. 248.

CHARLES COX FARM—No. 11.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	10	10
Blue shale	70	80
Shell	5	85
Blue shale	30	115

DEVONIAN SYSTEM.

Black shale	(Devonian)	100	215
White clay	(Devonian)	8	223
"Cap rock"		2	225
"Oil sand"—Salt water			

LOG No. 249.

CHARLES COX FARM—No. 12.

Strata		Thickness	Depth
MISSISSIPPIAN SYSTEM.			
Sand		14	14
Blue shale		28	42
Shell		7	49
Blue shale		40	89
DEVONIAN SYSTEM.			
Black shale	(Devonian)	102	191
White clay	(Devonian)	8	199
"Cap rock"		1	200
"Oil sand"		61	261

LOG No. 250.

CHARLES COX FARM—No. 13.

Strata		Thickness	Depth
MISSISSIPPIAN SYSTEM.			
Shale		57	57
Shell		6	63
Blue shale		53	116
Sand		5	121
Blue shale		95	216
Sand		10	226
Blue shale		63	289
DEVONIAN SYSTEM.			
Black shale	(Devonian)	105	394
White clay	(Devonian)	9	403
"Cap rock"		5	408
"Oil sand"—oil.			

LOG No. 251.

F. J. WAGES FARM—No. 1.
Station Camp Creek.

Strata		Thickness	Depth
DEVONIAN SYSTEM.			
Sand and mud		26	26
Black slate	(Devonian)	59	85
"Fire clay" (shale)	(Devonian)	5	90
Lime—Oil and gas		3	93

LOG No. 252.

F. J. WAGES—No. 2.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Sand and mud	27	27
Black slate (Devonian)	58	86
"Fire clay" (shale) (Devonian)	5	91
Lime—Oil and gas	3	94

LOG No. 253.

F. J. WAGES—No. 3.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Sand and mud	21	21
Black slate (Devonian)	62	83
"Fire clay" (shale) (Devonian)	5	88
Lime—Salt water	23	111

LOG No. 254.

F. J. WAGES—No. 4.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Sand and mud	23	23
Black slate (Devonian)	61	84
"Fire clay" (shale) (Devonian)	5	89
Lime—Gas show and water	3	92

LOG No. 255.

F. J. WAGES—No. 6.

DEVONIAN SYSTEM.

Strata	Thickness	Depth
Sand and mud	22	22
Black slate. (Devonian)	83	105
"Fire clay" (shale) (Devonian)	4	109
Lime—Oil and gas show. Water	55	164

LOG No. 256. CALLAHAN FARM.

Ross Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Sand	210	210
Lime	168	378
Sand and lime (?)	200	578
Soft lime (?)	225	803
DEVONIAN SYSTEM.		
Black shale (Devonian)	125	928
"Fire clay" (White shale)	12	940
"Oil sand"	10	950

LOG No. 257.

HARRIS FARM—No. 1.
Ross Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	10	10
Lime	165	175
Sandy shale	205	380
Light shale	207	587
DEVONIAN SYSTEM.		
Black shale } (Devonian)	116	703
White shale } (Devonian)	8	711
"Cap rock"	1	712
"Oil sand"—Oil	6	718

LOG No. 258.

HARRIS FARM—No. 2.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	20	20
Lime	175	195
Sandy shale	210	405
Light shale	236	641
DEVONIAN SYSTEM.		
Black shale } (Devonian)	125	766
White shale } (Devonian)	4	770
"Cap rock"	1	771
"Oil sand"—Oil	17	788

LOG No. 259.

A. J. RAWLINS FARM—No. 15.
Sweet Lick Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Red shale	10	10
Lime	50	60
Blue shale	376	436
Sand	7	443
DEVONIAN SYSTEM.		
Black shale } (Devonian)	114	557
White clay } (Devonian)	7	564
"Oil sand"—Oil	24	588

LOG No. 260.

A. J. RAWLINS FARM—No. 16.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	7	7
Red shale	18	25
Light shale	145	170
Red rock	8	178
Blue shale	13	191
DEVONIAN SYSTEM.		
Black shale (Devonian)	105	296
White clay (Devonian)	8	302
"Oil sand"—Oil	16	318

LOG No. 261.

A. J. RAWLINS FARM —No. 17.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	9	9
Shale	54	63
DEVONIAN SYSTEM.		
Black shale (Devonian)	102	165
White clay (Devonian)	7	172
"Cap rock"	1	173
"Oil sand"—Oil	21	194

LOG No. 262.

A. J. RAWLINS FARM—No. 18.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	18	18
Clay	57	75
Blue shale	265	340
Shells	30	370
Blue shale	5	375
Gray shale	45	420
Red rock	10	430
Gray shale	9	439
DEVONIAN SYSTEM.		
Black shale (Devonian)	104	543
White clay (Devonian)	7	550
Oil sand—Oil	23	573

LOG No. 263.

A. J. RAWLINS FARM—No. 19.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	10	10
Blue shale	44	54
Red rock	6	62
DEVONIAN SYSTEM.		
Black shale (Devonian)	114	176
White clay (Devonian)	3	179
"Oil sand"—Salt water	38	217

LOG No. 264.

A. J. RAWLINS FARM—No. 20.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	16	16
Blue shale	54	70
Shaly sand	40	110
Blue shale	215	325
Gray shale	4	329
Blue shale	36	365
Shells	15	380
Blue shale	25	405
Red rock	6	411
Gray shale	12	423
DEVONIAN SYSTEM.		
Black shale (Devonian)	106	529
White clay (Devonian)	6	535
"Oil sand"—Oil	34	569

FLOYD COUNTY.

LOG No. 265.

A. S. CRISP WELL.
Bucks Branch.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	15	15
Sandstone—gray	12	27
Slate—light	25	52
Coal	3	55
Sandstone—gray	8	63
Slate—light	18	81
Sandstone—gray	14	95
Slate—light	20	115
Sandstone—gray	12	127
Slate	20	147

Coal	4	151
Sandstone—gray	24	175
Slate—black. Cased at 177 ft.	75	250
Sandstone—gray	58	308
Slate—black	42	350
Sandstone—white	18	368
Slate—black	38	406
Sandstone—gray	22	428
Slate—black	30	458
Sandstone—gray	12	470
Slate—black	37	507
Sandstone—gray. Salt water at 636	129	636
Slate—black	6	642
Sandstone—white	30	672
Slate—light. Cased at 680 ft.	12	684
Sandstone—white	41	725
Slate—black	28	753
Sandstone—white	47	800
Slate—black. Cased at 804 ft.	5	805
Sandstone—gray	20	825
Slate—black	16	841
Slate—yellow	26	867
Sandstone—gray	38	905
Shale—red—caving	18	923
Slate—blue	7	930
Shale—red	40	970
Slate—black. Cased at 1003 ft.	40	1010
Sandstone—gray	12	1022
Slate—light	19	1041
Sandstone—gray and white	20	1061

Well is entirely in Pottsville.

LOG No. 266.

MOUTH OF MIDDLE CREEK.

Strata	Thickness	Depth
Soil Conductor		16
PENNSYLVANIAN SYSTEM.		
Shale	94	110
Coal	1	111
"Sandy" shale	139	250
Coal	6	256
Sand	86	342
Shale	80	422
"Beaver" sand	128	550
Black slate	6	556
"Horton" sand, salt water at 560 ft.	80	636
Sandy shale	191	827

MISSISSIPPIAN SYSTEM.		
"Maxon" sand	80	907
"Little" lime	24	931
"Pencil Cave"	2	933
"Big Lime," gas 6 5-8 casing 956 ft.	113	1046
"Big Injun," small amount gas, top	159	1205
Lime shells	185	1390
"Weir" sand, gas and green oil from 1394	38	1428

Oil 30.55 Baume. Oil stood 200 feet high in well day after drilling into "Weir Sand." Log from A. Fleming, Manager, T. M. King, Driller.

LOG No. 267. WALLEN FARM.

Beaver Creek below Salt Lick.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	22	22
Slate	18	40
Coal	4	44
Black slate	51	95
Coal	4	99
White sand	28	127
Black slate	28	155
Gray sand	15	170
Light slate	17	187
Coal	3	190
Light slate	20	210
Sand	3	213
Light slate	85	298
Sand	22	320
Light slate	5	325
Sand	22	347
Slate	183	530
Dark sand	5	535
Black slate	45	580
White sand (Beaver)—Gas	124	704
Light slate	10	714
White sand (Horton)	129	843
Light slate	5	848
White sand (Pike)	67	915
Coal	3	918
Sand	35	953
Dark slate	5	958
Dark sand	19	977
MISSISSIPPIAN SYSTEM.		
Black slate	87	1064
Sand (Maxon) Gas	49	1113
Black slate	3	1116

LOG No. 268.

WELL AT MOUTH OF SALT LICK OF RIGHT BEAVER.

Strata	Thickness	Depth
Soil	34	34
PENNSYLVANIAN SYSTEM.		
Black slate	10	44
White sand	50	94
Black slate	30	124
Gray sand	100	224
Light slate	76	300
White sand	20	320
Light slate	130	450
White sand (Beaver)—Oil, gas and salt water	212	662
Black slate	30	692
White sand (Horton)—Salt water	108	800
Coal	1	801
Sand	43	844
Black slate	59	903
Sand (Pike)—Gas and oil	93	996
MISSISSIPPIAN SYSTEM.		
Black slate	60	1056
Sand—Salt water	50	1106
Black slate	11	1117
Dark lime	13	1130
Slate and lime shells	35	1165
Lime and slate	8	1173
Slate and lime shells	19	1192
Lime—"Big lime"—Oil and gas at 1269	138	1330
Red shale	95	1425
Slate and sand shells	181	1606
Black slate	44	1650
Light blue slate and sand shells	130	1780
DEVONIAN SYSTEM.		
Black slate	200	1980
Slaty lime—Gas	2	1982
Black slate—Gas	225	2207
Soft light slate	33	2240

LOG No. 269.

AKER BRANCH LEFT BEAVER CREEK.

Strata	Thickness	Depth
Drift 10 in. casing		44

PENNSYLVANIAN SYSTEM

Slate	36	80	
Sandstone	20	100	
Slate	120	220	
Sandstone	35	255	
Slate	100	355	Cased 8¼ at 260 ft.
Sandstone	20	375	
Slate	125	500	
Sandstone ("Salt Sand")	190	690	Shows oil and gas 572. Shows gas 537—50,000 cu. ft. Saltwater filled to 660.
Slate	59	749	Cased 6⅝—728.
Sandstone	59	808	
Slate	10	818	
Sandstone	5	823	
Slate	12	835	
Sandstone	10	845	

MISSISSIPPIAN SYSTEM

Red rock	18	863	
Slate	38	901	
Sandstone "Maxon" thin	51	952	
Limestone	6	958	
Slate	8	966	
Red rock	99	1065	
Slate, sandstone and shell	15	1088	
Slate	30	1110	
Limestone	10	1120	
Slate	10	1130	
Dark lime	77	1207	1212—gas 25,000.
Sandstone, "Bradley"	30	1237	
Part limestone	33	1270	
White lime, "Big Lime"	140	1410	Gas at 1396.
White & sandy "Big Lime"	5	1415	
White limestone "Big Lime"	19	1434	
Red shale	50	1484	
Slate	47	1531	
Slate and sand	234	1765	
Brown shale	19	1784	
Sandstone "Wier"	45	1829	Show of "Amber" oil at 1784 in top.
Bran slate	150	1979	
Berea	21	2000	Gas 1979-1994.
Slate	2	2002	Total depth.

LOG No. 270.

OTTER CREEK OF LEFT BEAVER

Strata	Thickness	Depth
Quicksand and gravel	50	50
PENNSYLVANIAN SYSTEM		
Hard white sand	80	130
Light shale	5	135
Sand, hard	15	150
Shale, dark	20	170
Sand, white and hard	80	250
Shale, white and firm	70	320
Sand, white and hard	10	330
Shale, slow drilling	55	385
"Little Dunkard," sand, hard	45	430
Sand, white and hard	55	485
Shale and shells	75	560
"Big Dunkard" sand, hard	50	610
Shale and shells	125	735
Gas sand, black and hard	65	800
Shale and shells	55	855
"Salt" sand, dark and hard	65	920
Shale and shells	55	975
Sand, hard	160	1135
Shale and shells	70	1205
"Salt" sand, very hard	445	1650
Shale, black and soft	10	1660
Sand, gritty and hard	15	1675
Shale, soft	31	1706
Sand, very hard	40	1746
Shale and shells	59	1805
Sand, hard and white	10	1815
MISSISSIPPIAN SYSTEM		
Slate, very soft	7	1822
"Maxon" sand, very hard	63	1885
Shale, very soft	8	1893
"Maxon" sand, very hard	47	1940
Slate	30	1970
Lime (cored 3 ft.)	14	1984
"Pencil Cave" shale, very soft	6	1990
Shale	69	2059
"Big Lime" (oil 2222-28)	232	2291
Sand, hard (gas at 2296)	7	2298
Shale	42	2340
"Big Injun" Red Sand	30	2370
"Big Injun," dark, hard sand (block oil 2376)	10	2380
Lime and shells	82	2462

Sand, soft	29	2491
Shale	142	2633
Brown shale	73	2706
"Berea" shell and sand, very hard	4	2710
Shale	29	2739
DEVONIAN SYSTEM		
Black shale and shells (gas production 2109)	70	2809
Black shale	187	2996
Sand	5	3001
Shale	99	3100

10 in. casing, 371.
8¼ in. case 872.
6⅝ in. case, 1983.
Hole full of water at 70.
¼ bailer of water at 875 per hour.
4 bailer of water at 1848 per hour.
4 bailer of water at 1982 per hour.

LOG No. 271.

W. S. HARKINS FARM.

Trimble Branch.

Strata	Thickness	Depth
Alluvial Quicksand	40	40
PENNSYLVANIAN SYSTEM		
Conglomerate shale, sand and lime	408	448
Top salt sand (gas 450)	5	453
Shale	35	498
Sand (water 670)	197	685
Lime	35	720
Sand, whte, settling	30	750
Slate	50	800
Sand (oil and gas 800 to 812)	40	840
Shale, blue	79	919
MISSISSIPPIAN SYSTEM		
"Maxon" sand	65	984
"Little Lime"	20	1004
"Pencil Cave"	3	1007
"Big Lime"	160	1167
Shells, sand and shale	257	1424
Brown shale	40	1464
"Berea" sand, (first) oil 1467-1480	40	1504
Shale, black	3	1507
"Berea" sand	40	1547

DEVONIAN SYSTEM

Shale, black	148	1695
Shale, brown	20	1715
Sand, Gray	5	1720
Shale, black		1750
Bottom of hole		1750

Casing put in 12½, 40 feet.
Casing put in 8¼, 115 feet.
Casing put in 6⅝, 1017 feet.
Shot well from 1467 to 1482 feet with 60 qts. nitro-glycerine.
Shot cleaned well. Well filled up about 90 ft. within forty minutes after shot.
Contractor—King Drilling Co., Huntington, W. Va.

LOG No. 272. ISAAC BRADLEY FARM.
1¾ Miles up Right Beaver Creek.

Strata	Feet		Feet
Drift, 10" Casing	0	to	22
PENNSYLVANIAN SYSTEM.			
Sandstone, white	25	"	47
Slate, black	35	"	82
Coal	5	"	87
Sandstone, white	60	"	147
Slate, black	53	"	200
Coal	6	"	206
Slate, black	44	"	250
Sandstone, dark gray	36	"	286
Slate, cased 8¼" at 278'	3	"	289
Sandstone, gray	27	"	316
Slate and shells	125	"	441
Sandstone, white. Salt water 510'	180	"	621
Slate	5	"	626
Sandstone. Gas show at 630'	14	"	640
Slate, Shelly from 645 to 648'	29	"	669
Sandstone, white	46	"	715
Slate, Shelly	15	"	730
Sandstone, white	55	"	785
Slate	5	"	790
Sandstone, white; oil and gas show 792'	20	"	810
Sandstone, very dark	10	"	820
Slate, black	30	"	850
Sandstone, gray; oil show 872'	27	"	877
Sandstone, mainly white; gas show 910' cased 1st time at 943'; salt water flooded at 943'; casing pulled and reamed from 943 to 947 (case 6⅝" top Maxon sand which should be 1097 in this well)	138	"	1015

Slate, black, cased 6⅝" at 1018	26	to	1041
Sandstone, gray	14	"	1055
Slate, dark	42	"	1097
MISSISSIPPIAN SYSTEM.			
Maxon Sand, Sandstone, white, ¾ million feet gas at 1131'; oil show at 1200'; salt water 4 Bailers at 1220'	143	"	1240
Slate, black	12	"	1252
Sandstone, dark gray	10	"	1262
Slate, black	8	"	1270
Limestone	28	"	1298
Slate, black	15	"	1313
Sandstone, "Keener" first 6 ft., brown, with oil production; balance light gray	30	"	1343
Slate	6	"	1349
Slate, limy	6	"	1355
Big Lime, Limestone	38	"	1393
Big Lime, Sandstone	4	"	1397
Big Lime, Limestone	30	"	1427
Big Lime, Limestone, Sandy, gas at 1429' small amount	2	"	1429
Big Lime, Limestone	75	"	1504
Red Shale	3	"	1507
Limestone	4	"	1511
Sandstone, Limy	4	"	1515
Slate	4	"	1519
Red shale	10	"	1529
Slate, sandy	2	"	1531
Red Shale	20	"	1551
Slate, sandy	2	"	1553
Red shale, slaty	7	"	1560
Slate, sandy	3	"	1563
Red shale	22	"	1585
Slate, black	81	"	1666

Stopped in black slate at 1666 ft.
Berea should be at 2080.

LOG No. 273.

JACK ALLEN FARM.
Mouth of Salt Lick.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	38	44
Coal	2	40
Gray sand	50	90
Slate	75	165
Gray sand	50	215

Slate	15	230
Gray sand	18	248
Black slate	32	280
Gray sand	30	310
Dark slate	120	430
Sand (Beaver) Gas	60	490
Black slate (Beaver)	8	498
Sand (Beaver)	170	668
Coal	1	669
Slate	34	703
White sand (Horton)	98	801
Coal	1	802
Gray sand	4	806
Black slate	15	821
Gray sand	29	850
Dark slate	69	919
Sand (Pike)	41	960
Slate (Pike)	19	979
Sand (Pike)	19	998
Slate	2	1000

(Well all in Pottsville).

JACK ALLEN FARM.
Right Beaver near Salt Lick.

LOG No. 274.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	29	29
Sand	26	55
Slate	35	90
Sand	12	102
Slate	55	157
Gray sand	44	201
Light slate	15	216
Blue sand	5	221
Black slate	22	243
Dark gray sand	12	255
Light slate	35	290
Black sand	3	293
Light slate	47	340
Gray sand	18	358
Black slate	10	368
Black sand	19	387
Light slate	27	414
Sand (Beaver) Gas and salt water	238	652

Coal	2	654
White sand	8	662
Dark slate	22	684
White sand (Horton)	114	798
Black slate	5	803
Gray and black sand	44	847
Black slate	53	900
Light sand	11	911
Light slate	3	914
Dark gray sand	2	916
Black slate	8	924
Sand (Pike) Oil	28	952

(Well is all in Pottsville).

LOG No. 275.

E. S. FRAZIER GAS WELL No. 1.

Strata	Thickness	Depth
Drift	0	37
PENNSYLVANIAN SYSTEM.		
Sandstone	20	57
Slate	154	211
Sandstone, gray	20	231
Coal	4	235
Slate, black (Cased 8¼" at 249')	125	360
"Beaver" sand, gray (little gas at 560) Salt water, half enough for drill at 640'	320	680
Sandstone, black	21	701
Sandstone, gray (little gas and salt water enough to drill at 755')	101	802
Slate, black	36	838
Sandstone, light colored (little gas at 844' salt water flooded at 900', gas to flow Salt water at 926')	193	1031
Slate, black (cased 6⅝" at 1038')	21	1052
MISSISSIPPIAN SYSTEM.		
Red shale	54	1106
"Maxon" sand, white (little gas at 1165' S. W. for drill at 1204', little gas 1255' little S. W. 1260')	161	1267
"Little" lime, black	21	1288
"Big" Lime, white (gas production 1360' to 1366', Oil show 1431')	149	1437
Limestone, blue, hard	47	1484

"Sunberry" red shale, sandy (stopped drilling in this, January 26, 1907)	82	1566
Slate and shells	279	1845
Brown shale	84	1938
"Wier" sand	18	1956
Light slate (break)	6	1962
"Berea" sand, lime shell	18	1980
Light slate	180	2160
DEVONIAN SYSTEM.		
Shale and dark slate	365	2525
Light slate	165	2690
Shale, black	34	2724
"Corniferous"—"Ragland Sand"—Lime	30	2754

Note—First drilling finished January 26, 1907 at 1566 feet. Well tubed, packed and shut in, on 2" tubing, March 12, 1907. Bottom of packer set at 1328 ft. 2". Cage on bottom of packer, and 328 feet of Anchor under packer. All casing left in well. Pressure gauge of well taken on March 13, 1907.

30 seconds	55
1 minute	85
1½ minute	120
2 minutes	150
2½ minutes	185
3 minutes	210
3½ minutes	235
4 minutes	260
4½ minutes	280
12½ minutes	435

Second, drilling started fall of 1915 and completed to total depth of 2754 feet.

Author's Geological Note.—This well located in Syncline.

LOG No. 276.

JACK ALLEN FARM.
Salt Lick of Right Beaver.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	43	43
Black slate	48	91
Gray sand	27	118
Light slate	53	171
Light sand	47	218
Dark slate	5	223
Dark sand	35	258
Dark slate	60	318

Gray sand	23	341
Light slate	40	381
Light sand	15	396
Dark slate	42	438
White sand (Beaver) pebbly. Gas and salt water	232	670
Dark slate	24	694
White sand (Horton)	145	839
Black sand	20	859
Shelly slate	20	879
Black slate	50	929
White sand (Pike) gas	77	1006
Slate	8	1014

(All Pottsville).

LOG No. 277.

JACK ALLEN FARM.

Motts branch of Salt Lick.

Strata	Thickness	Depth
Soil	22	22
PENNSYLVANIAN SYSTEM.		
Gray sand	38	60
Slate	15	75
Gray sand	39	114
Slate	71	185
Gray sand	51	236
Slate	15	251
Gray sand	20	271
Slate	69	340
Gray sand	15	355
Slate	105	460
Sand (Beaver) Gas	269	729
Coal	1	730
Dark slate	14	744
White sand (Horton)	96	840
Coal	1	841
Gray sand (Pike)	29	870
Dark slate (Pike)	6	876
White sand (Pike)	10	886
MISSISSIPPIAN SYSTEM.		
Dark slate	97	983
Sand (Maxon) Gas and salt water	133	1116
Lime	9	1125

LOG No. 278. WYLIE SLONE FARM.
Buckeye of Left Middle Creek.

Strata	Feet		Feet
Alluvial (quicksand)	25		
PENNSYLVANIAN SYSTEM.			
12½ in. casing	25		
Fire clay and blue shale	30	to	55
Coal h	5	to	60
Conglcmerate (Shale, sand and shells)	410	to	470
Beaver sand—White and hard	180		650
Water at	590		
Slate, black	15		665
Sand, white	60		725
MISSISSIPPIAN SYSTEM.			
Shale	104		829
Maxon sand	85		914
Slate, blue	6		920
Sand, white (show oil 930)	32		952
Lime, black, sandy	24		976
Big lime, white and hard	165		1141
Gas	1041		
Gas (94560 cu. ft.)	1096		
A little oil with gas.			
Bastard lime, dark, gritty	99		1240
Big Indian sand, red	25		1265
Shale and shells, gray and brown	185		1450
Gas sand, limy, hard	70		1520
Shale, brown, soft	145		1685
Finished in shale at	1685		
Bridge set for plug at	100	in line.	
Plug, broken stone and sand	30		
Male and female wood plug	7		
Broken stone and sand	30		

Gas at	1041	
Water at	590	
12½ in. casing	25	
8¼ in. casing	185	
6⅝ in. casing	1006	
Hole plugged, casing pulled and abandoned.		
Length of plug	67	feet.
Casing put in, 12½ in.	25	feet.
Casing put in, 8¼ in.	185	feet pulled 185
Casing put in, 6⅝ in.	1006	feet pulled

Well plugged and abandoned.
Authority, King Drilling Company, Contractors.

LOG No. 279. JOS. GEARHART FARM.
Salt Lick of Right Beaver.

Strata	Thickness	Depth
Soil	27	27
PENNSYLVANIAN SYSTEM.		
Gray sand	37	64
Coal	1	65
Black slate	15	80
White sand	70	150
Black slate	50	200
Gray sand	50	250
Dark lime (?)	10	260
Gray sand—Gas	50	310
Slate—Gas	163	473
Gray sand	47	520
Light slate	38	558
White sand (Beaver)	156	714
Sandy lime (?)	5	719
Gray sand (Horton)	126	845
Black shale	1	846
Dark lime (?)	5	851
Sand (Pike)	54	905
Shelly slate (Pike)	5	910
Sand (Pike) Gas	18	928
MISSISSIPPIAN SYSTEM.		
Black slate	52	980
Sand (Maxon) Gas, oil and salt water	178	1158
Black lime	5	1163
Blue slate	2	1165
Red shale	5	1170
Dark lime	2	1172

LOG No. 280. R. ALLEN FARM.
Right Beaver Creek.

Strata	Thickness	Depth
Drift	34	34
PENNSYLVANIAN SYSTEM.		
Slate	11	45
Gray sand	15	60
Slate	55	115
Gray sand	34	149
Slate	9	158
Gray sand	32	190
Black slate	24	214
Gray sand	16	230
Black slate	4	234

Gray sand	11	245
Black slate	35	280
Coal	2	282
Black slate	38	320
Gray sand	68	388
Black slate	27	415
Gray sand	20	435
Black slate	41	476
Gray sand	54	530
Black slate	38	568
Coal	2	570
Black slate	60	630
Sand (Beaver)—Salt water	198	828
Coal	1	829
Dark slate	40	869
Sand (Horton)	115	984
Dark slate	24	1008
Dark sand	8	1016
Dark slate	40	1056
Sand (Pike)	98	1154
MISSISSIPPIAN SYSTEM.		
Dark slate	32	1186
Sand (Maxon)—Gas, oil and salt water	50	1236

LOG No. 281.

A. B. BRODE & COMPANY FARM.
Right Beaver Creek.

Strata	Thickness	Depth
Drift 10" casing	27½	27½
PENNSYLVANIAN SYSTEM.		
Slate and shells		360
Sand	40	400
Gas	400	
Hole full of water at		800
Slate	40	840
Sandy shale	40	880
Slate	10	890
Sandy shale	25	215
Slate	5	920
Sand, white	30	950
Slate	10	960
Black sandy shale	55	1015
Dark slate	10	1025
Black sand	5	1030
White sand	5	1035
Slate	10	1045

MISSISSIPPIAN SYSTEM.		
Black sandy shale	5	1050
White sand, "Maxon"		1050
Oil showed		1060
Gas at		1064
Break		1071½
6⅝" Casing		1061½
8¼" Casing		133

LOG NO. 282.

WELL AT GARRETT.
(Partial Record.)

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Drift	27	27
Slate and shells	333	360
Sand and gas		400
Missing		840
Sandy shale	40	880
Slate	10	890
Sandy shale	25	915
Slate	5	920
White sand	30	950
Slate	10	960
Black sandy shale	55	1015
Dark slate	10	1025
Black sand	5	1030
White sand	5	1035
MISSISSIPPIAN SYSTEM.		
Slate	10	1045
Black sandy lime	5	1050
Sand—oil show at 1060	21	1071

LOG NO. 283.

GEORGE ALLEN FARM.
Right Beaver.

Strata	Thickness	Depth
Soil	23	23
PENNSYLVANIAN SYSTEM.		
Slate	17	40
Coal	2	42
Gray sand	38	80
Slate	50	130
Gray sand	22	152
Slate	107	259
Gray sand	61	320

Slate	80	400
Sand	52	452
Slate	90	542
White sand (Beaver)	132	674
Slate	7	681
Sand (Horton)—Gas and salt water	236	917
Black slate	75	992
Sand	9	1001
Black slate	7	1008
White sand (Pike)—Oil	70	1078
Slate	½	
Sand	14½	1093
MISSISSIPPIAN SYSTEM.		
Slate	47	1140
Sand (Maxon)		

LOG No. 284. STEELE CREEK.

Right Beaver Creek.

Strata	Thickness	Depth
Drift (10" casing)	0	15
PENNSYLVANIAN SYSTEM		
Limestone	25	40
Shells and slate	35	75
Sandstone	25	100
Black slate (8" casing)	50	150
White sand	58	208
Black slate	12	220
Limestone	61	280
Slate and shell	40	320
Limestone	30	350
Brown shale	15	365
Gray slate	37	402
Black slate	8	410
Limestone	60	470
White sand	5	475
Limy sand	20	500
Sandstone	10	510
Limestone	72	582
Sandstone	116	698
Slate	5	703
Black lime	15	718
Sandy lime	5	723
Sandstone (salt water 735)	87	810
Dark sand	10	820
Black slate	15	825
Gray sand	18	843

MISSISSIPPIAN SYSTEM

Black slate	21	864
White sand "Maxon" gas at 892	26	890
White sand (2,00000 cu. ft.)		951

Not shot.
860 3" tubing on packer in 6" hole.
Drilled for A. B. Brode & Son.
S. L. Anderson, Driller.

LOG No. 285.

GEORGE ALLEN FARM.
Right Beaver.

Strata	Thickness	Depth
Drift	18	18
PENNSYLVANIAN SYSTEM.		
Gray sand	42	60
Coal	2	62
Gray sand	80	142
Black slate	81	223
Coal	3	225
Gray sand	32	257
Black slate	81	338
Sandy slate	69	407
Gray sand	30	437
Black slate	14	451
Gray sand	36	487
Coal	10	497
Gray sand	6	503
Dark slate	39	542
Gray sand	50	592
Dark slate	41	633
Gray sand	14	647
Slate	170	817
Sand (Beaver and Horton)—Gas and salt water	367	1184
Slate	6	1190
Gray sand	12	1202
Dark slate	60	1262
Light sand (Pike)—Gas and oil	39	1301
Dark slate (Pike)	5	1306
White sand (Pike)—Oil show	68	1374
MISSISSIPPIAN SYSTEM.		
Black slate	40	1414
White sand (Maxon)—Gas	28	1442

LOG No. 286.

GEORGE ALLEN FARM.
Right Beaver.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	46	46
Black slate	14	60
Gray sand	18	78
Slate and shells	90	168
Coal	2	170
Gray sand—Gas	97	267
Slate and shells	126	393
Sand (Beaver and Horton)—Gas and salt water	412	805
Coal	1	806
Slaty lime	4	810
Dark sand	17	827
Black slate—Gas	47	874
Sand (Pike)—Gas, oil and salt water	120	994
Black slate	6	1000
(All Pottsville).		

LOG No. 287.

RIGHT BEAVER CREEK.

Strata	Thickness	Depth	
Drift	0	45	8¼ casing.
PENNSYLVANIAN SYSTEM			
Slate	85	130	
Sandstone, gray	31	161	Gas 140 exhausted.
Slate	50	211	
Sandstone, gray	12	223	
Slate	53	276	
Sandstone, gray	19	295	Casing 6¼-280.
Slate	74	369	
Sandstone, white	166	535	(Salt Sand.)
Slate	8	543	
Sandstone, white	205	748	Saltwater flooded 655.
Coal	2	750	
Sandstone, gray	18	768	
Slate, dark	28	796	Cased 5 to 770.
Slate, yellow, caving	5	801	
Sandstone (gas 810-827)	56	857	
Slate, black, caving	13	870	
Sandstone, white	15	885	
Total		885	

LOG NO. 288.

GEORGE ALLEN FARM.
Right Beaver.

Strata	Thickness	Depth
Drift	30	30
PENNSYLVANIAN SYSTEM.		
Slate	12	42
Coal	4	46
Slate	18	64
Gray sand	16	80
Slate	23	103
Gray sand	25	128
Dark slate	25	153
Light sand	22	175
Dark slate	6	181
Coal	3	184
Dark slate	73	257
Light sand	36	293
Slate	203	496
Sand (Beaver)	246	742
Light slate	6	748
White sand (Horton)	165	913
Coal	1	914
Dark slate	5	919
Gray sand	8	927
Dark slate	58	985
Sand (Pike)—Gas and oil	29	1014
Dark slate	4	1018
Gray sand	13	1031
MISSISSIPPIAN SYSTEM.		
Dark slate	4	1035
Gray sand	10	1045
Slate and red rock	8	1053
Sand (Maxon) Gas and salt water	31	1084
Black slate	45	1129
Sand	50	1179

LOG No. 289.

NEWT. ALLEN FARM.
Right Beaver above Wilson Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	45	45
Slate	35	80
Gray sand—Gas	81	161
Slate	50	211
Gray sand	12	223

Slate	53	276
Gray sand	19	295
Slate	74	369
White sand (Beaver)	166	535
Slate	8	543
White sand (Horton)—Salt water	205	748
Coal	2	750
Gray sand	18	768
Dark slate	28	796
Yellow slate	5	801
Sand (Pike)—Gas	56	857
Black slate	13	870
White sand	15	885
(All Pottsville).		

LOG No. 290.

RIGHT BEAVER CREEK.

Strata	Thickness	Depth
Drift, 10 ft. casing		42
PENNSYLVANIAN SYSTEM.		
Sand	20	62
Slate	98	160
Sand	40	200
Slate and shells (292 feet)	200	400
Sand (8 in. casing)	230	630
"Salt" sand	75	715
Break	65	780
Slate	54	834
Sand and slate	14	848
Sandy shale	12	860
Broken up	55	915
White sand, oil at 940	29	944
Slate (955 ft. 6 5-8), oil at 978	56	990
Dark shale (casing)	10	1000
Broken up	50	1050
MISSISSIPPIAN SYSTEM.		
Dark shale (water)	6	1056
Slate	20	1076
Sand "Maxon," hole full 1146 ft.	84	1160
Break	1	1161
Dark sandy lime	21	1182
Slate	3	1185
White sandy lime	20	1205
Break	1	1206

Sand	25	1231
Big lime (dark)	26	1257
Big lime (light), oil at 1271	101	1358
Red limestone, oil at 1293	1	1359
Big lime, oil at 1311	45	1404
Red rock	13	1417
Big Injun, oil at 1482	83	1500
Big Injun—gas	6	1506
Slate and shell	54	1560

Shot with 65 lb. of 65 per cent. gelatin.
1237 feet 4 7-8 inch casing.
1240 feet 2 inch tubing on Disk Wall Packer.
Drilled for A. B. Brode and Son.
S. L. Anderson—Driller.

LOG No. 291.

MARY ESTEP FARM.
Right Beaver.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	58	58
Slate	40	98
Sand	21	119
Slate	81	200
Sand	29	229
Slate	10	239
Sand	14	253
Slate	69	322
Sand	20	342
Slate	98	440
Sand—Gas	118	558
Slate (Beaver)	2	560
Sand—Salt water	112	672
Slate	30	702
Sand (Horton)—Gas and salt water	67	769
Slate	19	788
Shelly slate	52	840
Sand (Pike)—Gas and oil	140	980
Slate	14	994
Light sand	26	1020
MISSISSIPPIAN SYSTEM.		
Slate	23	1043
Sand (Maxon)—oil and salt water	56	1099

LOG No. 292. MARY ESTEP FARM.
Right Beaver.

Strata	Thickness	Depth
Soil	37	37
PENNSYLVANIAN SYSTEM.		
Slate	123	160
Sand	102	262
Dark slate	173	435
Sand (Beaver)	246	681
Coal	2	683
Gray sand	8	691
Slate	25	716
Sand (Horton)	159	875
Dark slate	45	920
White sand (Pike) Oil	44	964
Slate and shells (Pike)	19	983
White sand (Pike) Gas	43	1026
MISSISSIPPIAN SYSTEM.		
Dark slate	18	1044
White sand (Maxon)—Oil	26	1070

LOG No. 293.
HOWARD BR. OF ROCK FORK OF RIGHT BEAVER.

Strata	Thickness	Depth
Soil and Gravel		15
PENNSYLVANIAN SYSTEM.		
Sand (water)	30	45
Slate	50	95
Black sand (water)	60	155
Slate	40	195
Sand (water)	20	215
Slate	60	275
Lime and sand shells	145	410
Sand	40	450
Slate	55	505
Sand	15	520
Slate	10	530
Salt sand	220	750
Gas at 650.		
Gas at 690		
Water at 730-745.		
Slate and lime shells	35	785
Sand, white	48	833
Dark lime	12	845
White sand	41	886
Coal	1	887
Dark sand	7	894
Gray sand	13	907

MISSISSIPPIAN SYSTEM.

Black shale	11	918
White sand (Maxon)	21	939
Oil show 937.		
Black oil show.		
Total depth		939

LOG No. 294.

JOHN MARTIN FARM.
Right Beaver.

Strata	Thickness	Depth
Soil	25	25

PENNSYLVANIAN SYSTEM.

Slate	25	50
Coal	3	53
Slate	17	70
Sand	51	121
Slate	34	155
Sand	55	210
Slate	2	212
Sand	29	241
Slate	194	435
Sand (Beaver)—Gas	219	654
Coal	2	656
Slate	29	685
Sand (Horton)	105	790
Slate	3	793
Sand	31	824
Slate	3	827
Sand	35	862
Slate	35	897
Sand (Pike)—Oil	56	953
Slate	34	987
Sand	10	997
Slate	5	1002
Sand	18	1020

MISSISSIPPIAN SYSTEM.

Slate	29	1049
Sand (Maxon)	67	1116

LOG No. 295. JOHN MARTIN FARM.

Right Beaver.

Strata	Thickness	Depth
Soil	40	40
PENNSYLVANIAN SYSTEM.		
Dark sand	15	55
Coal	5	60
Black slate	35	95
Gray sand	15	110
White slate	67	177
White sand	27	204
Black slate	8	212
Gray sand	43	255
Black slate	57	312
Dark sand	20	332
Black slate	107	439
Gray sand (Beaver)	231	670
Black slate	6	676
White sand	6	682
Black slate	30	712
White sand (Horton) salt water	137	849
Dark sand (Horton)	10	859
Gray sand (Horton)	23	882
Black slate	30	912
Gray sand (Pike) Oil	84	996
White slate (Pike)	4	1000
White sand (Pike) Oil	36	1036
MISSISSIPPIAN SYSTEM.		
Black slate	8	1044
White sand (Maxon)—Oil	43	1087

LOG No. 296.

STEELE CREEK, RIGHT BEAVER CREEK.

Strata	Thickness	Depth
Drift, 10 in. casing		16
PENNSYLVANIAN SYSTEM.		
Shale	24	40
Shale, hard	35	75
Sandstone	25	100
Black shale	60	160
Sand, white	48	208
Black slate	12	220
Shale, 8 in. casing	60	280
Black slate and shell	40	320
Shale	30	350

Brown shale and shell	15	365
Gray shale	37	402
Black slate (gas)	8	410
Shale, salt, sand	65	475
Shale	5	480
Shaly sand	20	500
Sand (Oil at 505)	10	510
Shale and sand	72	582
Sand (Gas)	116	698
Slate	5	703
Black shale	15	718
Sandy shale	5	723
Sand (salt water 735 feet, 17 bailers, hole full of water at 760 ft.)	97	810
Black sandy slate	15	825
Gray sand	18	843
MISSISSIPPIAN SYSTEM.		
Slate	18	861
Black shale	11	872
White sand—Gas 881 "Maxon"	11	883
White shale	5	888
White sand—gas, 800,000 cu. ft. "Maxon"	20	908

Not shot

825 feet 2 in. tubing on packer in 8 in. hole.

Drilled for A. B. Brode & Son.

S. L. Anderson, Driller.

Lyndon Brode, Field Manager.

LOG No. 297.

JOHN MARTIN FARM.

Right Beaver.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	22	22
Gray sand	18	40
Slate	160	200
Gray sand	30	230
Slate	238	468
Gray sand	65	533
Black slate	8	541
Sand (Beaver)	122	663
Dark slate	5	668
Gray sand	13	681
Dark slate	49	730
Sand (Horton)	120	850

Dark slate	7	857
Gray sand	20	877
Dark slate	30	907
White sand	20	927
Dark slate and shells	24	951
Gray and white sand—Oil	16	967
Black sandy slate	9	976
Light sand	9	985
MISSISSIPPIAN SYSTEM.		
Shelly slate	15	1000
Black and red shales	13	1013
Gray sand—Gas	12	1025
Black slate	40	1065
Gray sand—Gas	18	1083
Black slate	8	1091
White sand (Maxon), gas and salt water	51	1142

LOG No. 298.

JOHN MARTIN FARM.
Right Beaver.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	21	21
Sand	19	40
Coal	3	43
White slate	57	100
Coal	5	105
Sand	30	135
Slate	60	195
Sand	15	210
Slate	95	305
White sand	85	390
Slate	204	594
Sand (Beaver)	246	840
Black shale	10	850
Sand (Horton)	190	1040
Slate	15	1055
Sand (Pike)	60	1115
MISSISSIPPIAN SYSTEM.		
Slate	20	1135
Shale	80	1215
Sand (Maxon)—Oil and salt water	52	1267

LOG No. 299.

OSBORN BR. OF LEFT BEAVER CREEK.

Strata	Feet		Feet
Drift (10 inch casing 43 ft.)			35
PENNSYLVANIAN SYSTEM.			
Sandstone, gray	15	to	50
Slate and sand shells	115	"	165
Sandstone, gray	20	"	185
Shale and sand shells	87	"	272
Sandstone, white	42	"	314
Shale, dark (Cased 8¼ at 320 ft.)	12	"	326
Limestone (?) white	18	"	344
Sandstone, gray	56	"	400
Slate and sand shells	125	"	525
Shale, brown	10	"	535
Sandstone, white	50	"	585
Shale, black	15	"	600
Sandstone, white	162	"	762
Limestone(?)	32	"	794
Sandstone (show of oil at 804 ft., salt water at 819 and 840 ft. could not bail down)	55	"	849
Shale	1	"	850
Sandstone, white	10	"	860
Sand and lime shells (cased 6 5-8 in. at 872 ft. pulled out and set at lower depth)	15	"	875
Sandstone, white	25	"	900
Shale, blue, soft	35	"	935
Shale and sand shells	49	"	984
MISSISSIPPIAN SYSTEM.			
Red rock	50	"	1034
Shale and sand shells	65	"	1099
Limestone (?) white, sandy	16	"	1121
Sandstone, dark gray (salt water 1139 ft. filled up 700 ft. in hole in 6 hours)	18	"	1139
Sandstone, white	76	"	1215
Shale and lime shells (cased 6 5-8 in. at 1230 ft.)	17	"	1232
Limestone, dark	8	"	1240
Sandstone, light colored	40	"	1280
Limestone, dark	30	"	1310
Shale	2	"	1312
Limestone, white "Big Lime" (gas at 1417 ft. Est. 50,000 cu. ft. per 24 hrs.)	160	"	1472

(Drilled to 2151 feet.)

LOG No. 300.

DAN HOWARD FARM.
Right Beaver.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	20	20
Slate	6	26
Gray sand	12	38
Sandy slate	27	65
Light sand	33	78
Light slate	67	165
Gray sand	43	208
Light slate	22	230
White sand	20	250
Black slate	50	300
White sand	40	340
Black slate	60	400
Sand (Beaver)—Gas and salt water	268	668
Dark slate	26	694
Sand (Horton)	146	840
Slate and sand shells	18	858
Black slate—Oil show	33	891
Sand (Pike)—Oil and salt water	79	970
(All Pottsville).		

LOG No. 301.

DAN HOWARD FARM.
Right Beaver.

Strata	Thickness	Depth
Soil	52	52
PENNSYLVANIAN SYSTEM.		
Gray sand	15	67
Dark slate	12	79
Gray sand	14	93
Dark slate	72	165
Gray sand	45	210
Dark slate	212	422
White sand (Beaver)—Gas	231	653
Dark slate	40	693
White sand (Horton)—Salt water	107	800
Coal	1	801
Gray and white sand	14	815
Dark slate	4	819
Black sand	15	834
Black slate	46	880
Sand (Pike)—Gas and oil	59	939
(All Pottsville).		

LOG No. 302. WELL AT HOWARD'S STORE.
Right Beaver.

Strata	Thickness	Depth
Soil	31	31
PENNSYLVANIAN SYSTEM.		
Gray sand	50	81
Dark slate	60	141
Gray sand	13	154
Dark slate	74	228
Gray sand	43	271
Dark slate	216	487
White sand Beaver)—Gas	171	658
Dark slate	2	660
Sand (Horton and Pike?)—Salt water	234	894
Coal	1	895
Gray sand	20	915
MISSISSIPPIAN SYSTEM.		
Dark slate	20	935
Sand (Maxon)—Gas and oil	107	1042

LOG No. 303. TUCKER ALLEN FARM.
Right Beaver above Goose Creek.

Strata	Thickness	Depth
Soil	43	43
PENNSYLVANIAN SYSTEM.		
Gray sand	15	58
Gray slate	41	99
Gray sand	56	155
Gray slate	107	262
Gray sand	40	302
Gray slate	78	380
Gray sand—Gas	58	438
Dark slate	42	480
White sand (Beaver)	168	648
Dark slate	32	680
White sand (Horton)	94	774
Dark slate	41	815
Gray sand	10	825
Black slate	10	835
Black and gray sands	4	839
Yellow slate	6	845
Sand (Pike)—Oil and gas	92	937
MISSISSIPPIAN SYSTEM.		
Dark slate	10	947
White sand (Maxon)—Salt water	28	975
Dark slate	30	1005

LOG No. 304. WEBB FARM.
Henry Branch of Right Beaver.

Strata	Thickness	Depth
Soil	27	27
PENNSYLVANIAN SYSTEM.		
Dark slate	6	33
White sand	45	78
Light shale	72	150
Gray sand	59	209
Dark slate	17	226
Gray sand	25	251
Dark slate	21	272
Gray sand	18	290
Dark slate	160	450
White sand (Beaver)	60	510
Dark slate	7	517
White sand (Horton)	103	620
Dark slate	8	628
White sand	20	648
Dark slate	24	672
White sand (Pike)	78	750
Black slate	12	762
White sand (Salt sand)—Gas	95	857
MISSISSIPPIAN SYSTEM.		
Dark slate	15	872
Red shale	76	948
Slate and shells	177	1125
Limestone—"Big lime"	195	1320
Red shale	35	1355
Shelly slate	205	1560
Black slate	76	1636
Dark sand	90	1726
DEVONIAN SYSTEM.		
Brown slate (Devonian)	204	1930

LOG No. 305. T. G. ALLEN FARM.
Right Beaver.

Strata	Thickness	Depth
Soil	24	24
PENNSYLVANIAN SYSTEM.		
Slate	92	116
Sand	10	126
Slate	6	132
Sand	10	142
Slate	35	177
Sand	15	192
Slate	23	215
Sand	10	225
Slate	5	230

Sand	46	276
Slate	11	287
Sand	28	315
Slate	54	369
Black sand	12	381
Slate	129	510
White sand	15	525
Black slate (Beaver)	5	530
White sand — Salt water	215	745
Coal	4	749
Black slate	3	752
Gray sand	21	773
Slate	9	782
White sand (Horton	95	877
Black slate	20	897
Sand (Pike?)	50	947
Slate	98	1045
White sand	10	1055
White slate	15	1070
Sand	30	1100
MISSISSIPPIAN SYSTEM.		
Slate	75	1175
Sand (Maxon)—Oil show	32	1207

LOG No. 306 T. G. ALLEN FARM.

Right Beaver.

Strata	Thickness	Depth
Soil	42	42
PENNSYLVANIAN SYSTEM.		
Slate	7	49
Sand	50	99
Slate	83	182
Sand	68	250
Slate	90	340
Sand	20	360
Slate	100	460
Sand (Beaver)	178	638
Slate (Beaver)	5	643
Sand (Beaver)	183	826
Coal	2	828
White sand	20	848
Slate	5	853
Sand (Horton)	55	908
Slate	46	954
Sand (Pike)—Salt water	82	1036
Slate	5	1041
Sand	10	1051

MISSISSIPPIAN SYSTEM.		
White shale	40	1091
Sand (Maxon)—Oil show at 1092	19	1110
Slate	6	1116
Sand (Maxon)	32	1148
Slate	32	1180
Lime—"Big lime"	210	1390
Slate	50	1440
Red sand	47	1487

LOG No. 307.

NATHAN ESTEP FARM.
Right Beaver.

Strata	Thickness	Depth
Soil	35	35
PENNSYLVANIAN SYSTEM.		
White sand	15	50
Black slate	40	90
Dark sand	6	96
Black slate	86	182
Black sand	30	212
Black slate	10	222
Gray sand	25	247
Black slate	85	332
Sand	30	362
Slate	60	422
White sand (Beaver)	275	697
Slate	35	732
Sand	3	735
Slate	10	745
Sand (Horton)	150	895
Slate	20	915
Sand (Pike)	61	976
MISSISSIPPIAN SYSTEM.		
Slate	86	1062
White sand (Maxon)—Oil show	55	1117

LOG No. 308.

W. N. MARTIN FARM.
Right Beaver.

Strata	Thickness	Depth
Soil	38	38
PENNSYLVANIAN SYSTEM.		
Dark sand	12	50
Coal	4	54
White slate	43	97
Gray sand	13	110

Black slate	76	186
Dark sand	38	224
White slate	10	234
White sand—Gas	20	254
Dark slate	56	310
Slate and shale	4	314
White sand—Gas	22	336
Black slate	76	412
White sand—Gas	20	432
White slate	13	445
White sand (Beaver ?)—Gas	218	663
Black slate	5	668
Black sand	5	673
Slate and shale	40	713
White sand—Salt water	32	745
Black slate	80	825
Sand	30	855
Black slate	30	885
White sand—Gas	11	896
White slate	8	904
White sand	16	920
MISSISSIPPIAN SYSTEM.		
Black slate	106	1026
White sand	57	1083

LOG No. 309.

ADAM MARTIN FARM.
Right Beaver.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	51	51
White slate	25	76
Sand	114	190
Slate	25	215
Dark sand	15	230
Red rock	28	258
Black slate	5	263
Gray sand (Beaver)	193	456
White sand (Horton)—Salt water	384	840
Black slate	10	850
Sand	25	875
White slate	15	890
Sand	10	900
Slate	30	930
Sand	20	950

MISSISSIPPIAN SYSTEM.		
White slate	35	985
Sand	202	1187
Black slate	12	1199
Lime—"Big lime"—Gas at 1350	211	1410
Red sand	90	1500
Gray sand	10	1510
Brown shale—Gas	20	1530
White slate	955	2485
Hard lime	16	2501

LOG No. 310. GUFFEY WELL.
Right Beaver.

Strata	Thickness	Depth
Soil	45	45
PENNSYLVANIAN SYSTEM.		
Black slate	5	50
Coal	2	52
Gray sand	38	90
Black slate	69	159
Gray sand	104	263
Light slate	41	304
Gray sand	27	331
Light slate	122	453
Gray sand	30	483
Dark slate	21	504
White sand (Beaver)	174	678
Coal and lime shell	2	680
Slate	34	714
Sand (Horton)	116	830
Coal	1	831
Gray sand	18	849
Black slate	3	852
Black sand	29	881
MISSISSIPPIAN SYSTEM.		
Black slate	80	961
White sand—Gas	39	1000

LOG No. 311. DAVID HAYS FARM.
Right Beaver.

Strata	Thickness	Depth
Soil	31	31
PENNSYLVANIAN SYSTEM.		
Sand	15	46
Slate	22	68
Sand	12	80
Slate	75	155

Sand	36	191
Slate	9	200
Sand	30	230
Slate	206	436
Sand (Beaver)	154	590
Slate	5	595
Sand	85	680
Slate	4	684
Sand (Horton)—Salt water	301	985
Slate	5	990
Shelly sand	50	1040
Slate	64	1104
Sand (Pike)—Oil show and salt water	44	1148
MISSISSIPPIAN SYSTEM.		
Slate	3	1151
Sand (Maxon)—Salt water	26	1177

LOG No. 312.

SUSANNA GEARHART FARM.

Right Beaver.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	38	38
Slate	3	41
Gray sand	15	56
Slate	19	75
Gray lime (?)	8	83
Black slate	22	105
Gray sand	15	120
Lime (?)	10	130
Black slate	45	175
Gray sand	100	275
Slate	194	469
Sand (Beaver)—Oil, gas and salt water	123	592
Black slate	12	604
White sand (Horton)	191	795
Coal	1	796
Gray lime (?)	12	808
Gray sand	40	848
Black slate	55	903
White sand (Pike)—Gas	90	993
MISSISSIPPIAN SYSTEM.		
Slate and shells	20	1013
Reddish sand	40	1053
Dark slate	2	1055
White sand (Salt sand)—Salt water	45	1100
Lime	2	1013

LOG No. 313. MARION RICE FARM.
Prater Fork.

Strata	Thickness	Depth
Soil	23	23
PENNSYLVANIAN SYSTEM.		
Light slate	18	41
Dark slate	20	61
Black slate	25	86
Dark slate	22	108
Coal	4	112
Dark slate	70	182
Gray sand	4	186
Slate	19	205
Dark sand	5	210
Black slate	26	236
Light slate	8	244
Gray sand	43	287
Dark slate	43	330
Gray sand	58	388
Black slate	68	456
Gray sand (Beaver)	115	571
Black slate	18	589
Gray sand (Horton)	12	601
White sand (Horton) Salt water	34	635
Gray sand (Horton)	97	732
White sand (Horton)	41	773
Black slate	14	787
Brown slate	4	791
Sand (Pike)	76	867
Black slate	7	874
Gray sand—Stray or salt	40	914
MISSISSIPPIAN SYSTEM.		
Black slate	78	992
Gray sand, Maxon	28	1020
Lime	6	1026
Red shale	17	1043

LOG No. 314. JAMES PRATER FARM.
Head of Prater Fork of Brush Creek.

Strata	Thickness	Depth
Soil	46	46
PENNSYLVANIAN SYSTEM.		
Gray sand	20	66
Light slate	46	112
Gray sand	41	153
Light slate	87	240
Gray sand	30	270

Coal	1	271
Light slate	299	570
Sand (Beaver)—Gas	190	760
Slate	4	764
Sand (Horton)	61	825
Coal	3	828
Sand	30	858
Coal	2	860
Sand	26	886
Coal	1	887
Slate	6	893
Sandy slate	22	915
MISSISSIPPIAN SYSTEM.		
Yellow slate	6	921
Red shale	10	931
Sand (Maxon)—Gas, oil and salt water	228	1159

LOG No. 315.

HEAD OF PRATER FORK OF BRUSH CREEK.

Strata	Thickness	Depth
Soil	46	46
PENNSYLVANIAN SYSTEM.		
Light slate	35	81
Gray sand	10	91
Light slate	42	133
Gray sand	30	163
Light slate	8	171
Gray sand	62	233
Light slate	30	263
Gray sand	14	277
Light slate	76	353
Gray sand	20	373
Dark slate	34	407
Gray sand	9	416
Light slate	27	443
Gray sand	55	498
Light slate	99	597
Gray sand	6	603
Slate	4	607
White sand (Beaver and Horton)	145	752
Coal (Beaver and Horton)	1	753
Light gray sand (Beaver and Horton)	65	818
Coal (Beaver and Horton)	1	819
Light gray sand, Pike	109	928
Slate	2	930
Dark sand	10	940

MISSISSIPPIAN SYSTEM.

Black slate	6	946
Sand (Maxon)—Gas, oil and salt water	150	1096
Black slate	35	1131
Sand	5	1136

LOG No. 316.

JAMES HICKS FARM.
Head of Brush Creek.

Strata	Thickness	Depth
Soil	18	18
PENNSYLVANIAN SYSTEM.		
Slate	21	39
Gray sand	2	41
Slate	15	56
Gray sand	18	74
Slate	26	100
Gray sand	10	110
Slate	25	135
Gray sand	112	247
Slate	153	400
Gray sand	12	412
Slate	38	450
Gray sand	25	475
Sandy slate	73	548
Sand—gas (Beaver)	82	630
Dark slate (Beaver)	5	635
White sand—gas (Beaver)	54	689
Dark slate	3	692
White sand—salt water (Horton)	127	819
Coal and slate (Horton)	2	821
White sand (Horton)	83	904
Coal	1	905
Gray sand	7	912
Dark slate	38	950
White sand (Pike)—Gas	69	1019
MISSISSIPPIAN SYSTEM.		
Dark slate	30	1039
Sand (Maxon)—Oil and salt water	115	1164

LOG No. 317.

ESTHER HORTON FARM.
Rock Creek.

Strata	Thickness	Depth
Soil	20	20
PENNSYLVANIAN SYSTEM.		
Slate	24	44
Sand	19	63
Slate	57	120
Sand	20	140
Slate	55	195
Sand	12	207
Slate	23	230
Sand	20	250
Shelly slate	200	450
White sand (Beaver)—Gas	145	595
Slate	2	597
Sand (Horton)	92	689
Coal	1	690
Black slate	28	718
Coal	2	720
Black slate	6	726
Sand (Pike)—Gas	109	835
Black slate	12	847
Gray sand—Oil and gas show	11	858
MISSISSIPPIAN SYSTEM.		
Black slate	6	864
White sand (Maxon)—Oil	23	887

LOG No. 318.

WELL ONE MILE ABOVE MOUTH OF COW CREEK.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	40	40
Sand and slate	160	200
Slate	300	500
White sand (Beaver)—Salt water	245	745
Coal	5	750
Slate	110	860
White sand (Horton)—Gas	25	885
Slate and shells	20	905
Slate	10	915
White sand (Pike)—Salt water	27	942
(All Pottsville.)		

LOG No. 319. JOHN BURCHETT FARM.
3 miles up Cow Creek.

Strata	Thickness	Depth
Soil	22	22
PENNSYLVANIAN SYSTEM.		
Slate	48	70
Coal	3	73
Slate	77	150
Sand	30	180
Slate	45	225
Sand	30	255
Slate	50	305
Sand	5	310
Slate	115	425
Sand	40	465
Slate	78	543
Sand (Beaver and Horton)	287	830
Black slate	27	857
Sand (Pike)	61	918
Shelly slate	20	938
MISSISSIPPIAN SYSTEM.		
Slate	42	980
White sand (Maxon)—Salt water	23	1003

LOG No. 320. G. T. KENDRICK FARM.
Head of Cow Creek.

Strata	Thickness	Depth
Soil	33	33
PENNSYLVANIAN SYSTEM.		
Black slate	30	63
Gray sand	9	72
Dark slate	75	147
Gray sand	32	179
Dark slate	60	239
Gray sand	42	281
Dark slate	19	300
Gray sand	20	320
Dark slate	20	340
Gray sand	37	377
Dark slate	20	397
Gray sand	30	427
Dark slate	20	447
Gray sand	32	479
Dark slate	171	650
Coal	2	652
Sand	10	662
Black slate	5	667

Sand (Beaver)	53	720
Black slate	12	732
White sand (Horton)	108	840
Coal	1	841
Sand	65	906
Black slate	10	916
Sand (Pike)	107	1023
Dark slate	40	1063
Sand (Salt sand)	65	1128
MISSISSIPPIAN SYSTEM.		
Dark slate	5	1133
Dark sand	10	1143
Slate and red shale	120	1263
Gray sand	8	1271
Slate	62	1333
Sand and lime	40	1373
Dark slate	10	1383
Sand and slate	10	1393
Dark slate	17	1410

LOG No. 321. MORGAN WHITTAKER WELL,
GILL OIL CO.
Middle Creek, ½ mile S. W. of Prestonsburg.

Strata	Thickness	Depth
Soil	61	61
PENNSYLVANIAN SYSTEM.		
White sandstone	5	66
Light slate	34	100
Gray sandstone	4	104
Light slate	36	140
Gray sandstone	50	190
Black slate	5	195
Gray sandstone	65	260
Light slate—Cased at 265′	121	381
White sandstone	175	556
Coal	4	560
Gray sandstone	15	575
Dark slate	15	590
White sandstone	114	704
Black slate—Cased at 709′	8	712
Dark sandstone	12	724
White sandstone—Salt water at 735′	15	739
Black sandstone—Gas and oil show at 763′	25	764
Black slate	25	789
White sandstone—Gas and salt water at 810′	62	651

MISSISSIPPIAN SYSTEM.		
Black limestone	25	876
White limestone	39	915

Top of well is 72 feet below the Van Lear coal.
Drilled by L. H. Gormley.

LOG No. 322.

MOUTH OF PITTS FORK OF MIDDLE CREEK.

Strata	Thickness	Depth
Soil	32	32
PENNSYLVANIAN SYSTEM.		
Light slate	5	37
Dark sand	8	45
Dark slate	5	50
Coal	2	52
Dark slate	20	72
Gray sand	55	127
Dark slate	30	157
Gray sand	20	177
Dark slate	65	242
Gray sand	50	292
Black slate	5	297
Gray sand	20	317
Black slate	63	380
Gray sand	15	395
Black slate	95	490
Sand (Beaver)—Oil and salt water	282	772
Dark slate	2	774
White sand (Horton)	30	804
Coal	3	807
Gray sand	11	818
Dark slate	22	840
White sand (Pike)—Gas, oil and salt water	233	1073
MISSISSIPPIAN SYSTEM.		
Black slate	15	1088

LOG No. 323.

REFITT FARM.

Pitts Fork of Middle Creek.

Strata	Thickness	Depth
Soil	22	22
PENNSYLVANIAN SYSTEM.		
Light slate	28	50
Gray sand	20	70
Black slate	30	100
White sand	70	170
Black slate	8	178

Gray sand	82	260
Black slate	65	325
White sand	58	383
Light slate	17	400
Gray sand	28	428
Dark slate	22	450
Gray sand	18	468
Black slate	78	546
White sand	10	556
Black slate	8	564
Very dark slate	35	599
White sand	16	615
Dark slate	49	664
White sand (Beaver)—Salt water	142	806
Black slate	5	811
Sand (Horton)—Salt water	59	870
Black slate	17	887
Black sand	8	895
Black slate	25	920
Sand—Pebbly at base (Pike)—Gas, oil and salt water	235	1155
MISSISSIPPIAN SYSTEM.		
Black slate	16	1171
Limestone—"Big lime"	201	1372
Red shale	38	1410
Black shale	85	1495
White and shelly slate	100	1595
Dark slate	95	1690
White and shelly slate	70	1760
Brown slate (Devonian)	96	1856
White slate (Devonian)	12	1868
Brown slate (Devonian)	268	2136
Black slate (Devonian) Gas	15	2151

LOG No. 324.

GREEN PITTS FARM.
Head of Pitts Fork of Middle Creek.

Strata	Thickness	Depth
Soil	22	22
PENNSYLVANIAN SYSTEM.		
Slate	80	102
Sand	30	132
Black slate	37	169
Sand	38	207
Slate	5	212

Sand	37	249
Shelly slate	48	297
Sand	26	323
Slate	77	400
White sand	64	464
Slate	189	653
White sand (Beaver)	118	771
Slate	3	774
White sand (Horton)—Gas and salt water	221	995
Very dark sand	5	1000
White sand (Pike)	156	1156
Dark gray sand—Gas	10	1166
MISSISSIPPIAN SYSTEM.		
Slate	18	1184
White sand (Maxon)	46	1230

LOG No. 325.

JOSEPH GRAY FARM.

Left Fork of Bull Creek.

Strata	Thickness	Depth
Soil	8	8
PENNSYLVANIAN SYSTEM.		
Gray sand	37	45
Light slate	95	140
Gray sand	38	178
Shelly slate	77	255
Gray sand	105	360
Dark slate	91	451
Gray sand	20	471
Dark slate	30	501
White sand (Beaver)—Gas and salt water	194	695
Dark slate	13	708
Coal	2	710
White sand (Horton)	74	784
Coal	1	785
Gray sand	35	820
Sand (Pike)—Salt water	80	900
MISSISSIPPIAN SYSTEM.		
Red shale	35	935
Gray sand (Maxon)	7	942
Red shale	20	962
White sand (Maxon sand ?)—Salt water	68	1030

LOG No. 326.

JOHN GRAY FARM.
Head of Bull Creek.

Strata	Thickness	Depth
Gravel	14	14
PENNSYLVANIAN SYSTEM.		
Sand and shale	26	40
Coal	4	44
Shale and shells	266	310
Sand	90	400
Shale and shells	100	500
Sand (Beaver)—Gas at 610. Water at 625	200	700
Shale	22	722
Coal	2	724
Sand—Water at 756	72	796
Slate and shell	50	846
Sand	74	920
MISSISSIPPIAN SYSTEM.		
Red shale	30	950
Gray shale	41	991
Sand (Maxon)	93	1084
"Little lime"	24	1108
"Pencil Cave"	15	1123
"Big lime"—Oil show at 1190	162	1285
Sand (Big Injun)—Gas at 1300	40	1325
Lime shells	268	1593
Brown shale (Sunbury ?)	20	1613
Lime—Oil show at 1628	80	1693
DEVONIAN SYSTEM.		
Black shale and shells (Devonian)	135	1828
Gray slate	15	1843
Shells and shale	576	2419
Flinty lime	19	2440

LOG No. 327.

R. S. ELLIOTT FARM.
Head of Big Mud Creek.

Strata	Thickness	Depth
Soil	31	31
PENNSYLVANIAN SYSTEM.		
Slate	50	81
Blue sand	76	157
Dark slate	81	238
Gray sand	64	302
Dark slate	98	400
Dark sand	15	415
Dark slate	12	427

Gray sand	23	450
Dark slate	186	636
White sand	28	664
Slate	20	684
White sand	291	975
Dark slate	75	1050
White sand	50	1100
MISSISSIPPIAN SYSTEM.		
Dark slate	23	1123
White sand—Oil and salt water	352	1475
Gray sand	83	1558
Slate	8	1566
Red slate	24	1590
Sand—Oil show	141	1731
Black slate	30	1761

LOG No. 328.

RIGHT BEAVER CREEK

Keystone Gas Co., J. N. Allen No. 1.

Strata	Thickness	Depth
Drift, 8¼" casing	0	45
PENNSYLVANIAN SYSTEM.		
Slate	85	130
Sandstone, gray, gas 140 exhausted	31	161
Slate	50	211
Sandstone, gray	12	223
Slate	53	276
Casing 6¼		280
Sandstone, gray	19	295
Slate	74	369
"Beaver" Sandstone, white	166	535
Slate	8	543
Salt water flooded		655
Sandstone, white	205	748
Coal	2	750
Sandstone, gray	18	768
Slate, dark, cased 5 to 770	28	796
Slate, yellow, caving	5	801
Sandstone, (Pike) Gas 810-827	56	857
MISSISSIPPIAN SYSTEM.		
Slate, black, caving	13	870
Sandstone, white	15	885
Total depth		885

LOG No. 329.

STEELE CREEK, RIGHT BEAVER CREEK.

Pennagrade Oil & Gas Co., T. A. Martin No. 2.

Strata	Thickness	Depth
Drift (10" casing)	0	15
PENNSYLVANIAN SYSTEM.		
Limestone	25	40
Shells and slate	35	75
Sandstone	25	100
Black slate (No. 8 casing)	50	150
White sand	58	208
Black slate	12	220
Limestone	61	280
Slate and shell	40	320
Limestone	30	350
Brown shale	15	365
Gray slate	37	402
Black slate	8	410
Limestone	60	470
White sand	5	475
Limey sand	20	500
Sandstone	10	510
Limestone	72	582
Sandstone	116	698
Slate	5	703
Black shale	15	718
Sandy shale	5	723
Sandstone (Salt water 735)	87	810
Dark sand	10	820
Black slate	15	825
Gray sand	18	843
Black slate	21	864
White sand, "Pike," Gas at 892	26	890
White sand, 2,000,000 cu. ft.		951

Well not shot.

860 3" tubing on Packer in 6" hole.

A. B. Brode & Son, contractors.

LOG No. 330

RIGHT BEAVER CREEK.

Pennagrade Oil & Gas Company. Nathaniel Estep No. 1.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Drift, 10" casing	0	42
Sand	20	62
Slate	98	160
Sand	40	200
Slate and shells (292 feet)	200	400
Sand (8" casing)	230	630
"Salt" Sand (Gas 500,000 cu. ft.)	75	715
Break	65	780
Slate	54	834
Sand and slate	14	848
Sandy slate	12	860
Broken up	55	915
White sand, oil at 940	29	944
Slate (955 ft. 6⅝), oil at 978	56	990
Dark shale (casing)	10	1000
Broken up	50	1050
Dark shale (water)	6	1056
Slate	20	1076
Sand "Maxon," hole full 1146 ft.	84	1160
Break	1	1161
Dark sandy lime	21	1182
Slate	3	1185
White sandy lime	20	1205
Break	1	1206
Sand—"Bradley"	25	1231
MISSISSIPPIAN SYSTEM.		
"Big Lime" (dark)	26	1257
"Big Lime" (light, oil at 1271)	1	1358
Red Limestone, oil at 1293	101	1359
Big Lime, oil at 1311	45	1404
Red Rock	13	1417
"Big Injun," oil at 1482	83	1500
"Big Injun," gas	6	1506
Slate and shell	54	1560

Well completed August 14, 1918.

Shot with 65 pounds of 65% gelatin.

1237 feet 4⅝ inches casing.

1240 feet 2 inch tubing on Disk Wall Packer.

Elevation 686 feet.

Drilled for A. B. Brode and Son.

GRAYSON COUNTY.

LOG No. 331.

WELL AT MEREDITH.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil and clay	10	10
Gray shale	28	38
Gray sand	5	43
Black shale	32	75
Black sand—Asphalt	5	80
Black shale	25	105
Sand	5	110
Black shale	40	150
Coal	1	151
Black shale	5	156
Gray sand	10	166
Black rock—Asphalt	25	191
Shale	2	193
Gray sand	13	206
MISSISSIPPIAN SYSTEM.		
Gray shale	63	269
Brown lime	10	279
Gray shale	5	284
Red marl	16	300
Dark shale	6	306
Gray lime	10	316
Gray shale	4	320
Gray lime	46	366
Gray and white sand	46	412
Gray lime	33	445
Dark shale	5	450
Sand (Cypress ?)	60	510
Gray lime	92	602
White shale	3	605
White lime	25	630
Lime—Sulphur water at 774	300	930
Black sandy lime—Gas show	10	940
Brown and white lime	55	995
Brown shale	10	1005
Brown and white lime	140	1145
Gray, sandy lime—Gas show	15	1160
Gray lime	35	1195
Gray shale	12	1207
Lime and shale	13	1220
Dark gray, sandy lime	25	1245
Dark shale	20	1265
Dark lime	155	1420

Gray sand	27	1447
Sand and shale	5	1452
Gray and white lime	123	1585
Light gray shale	13	1598
DEVONIAN SYSTEM.		
Black shale	120	1718
Black lime	20	1738
Black and white lime	5	1743
Gray lime	52	1795
Light brown lime	30	1825
Gray sandy lime—Oil show	15	1840
Gray lime	10	1850
White lime	50	1900
Fine white sand (lime ?)—Oil show and water	10	1910

LOG No. 332.

JAMES E. McGREW WELL NO. 1.
Anneta, Grayson County, Kentucky.
Begun December 30, 1916, finished about April 25, 1917.
Elevation 750 feet, estimated.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil and clay	8	8
Sand rock	3	11
Gray shale	5	16
Black rock, asphalt	1	17
Blue shale	70	87
Gray sand, trace of asphalt	40	127
Blue shale	28	155
Light gray shale	17	172
MISSISSIPPIAN SYSTEM.		
Blue shale	18	190
Lime and shale, water	10	200
White shale	5	205
Marl, red and blue	8	213
White shale	7	220
Blue shale	30	250
Lime shells	5	255
Blue shale	48	303
Lime, white	8	311
Blue shale	15	326
Lime, gray, very hard	32	358
Shale	10	368
Sand	45	413

Lime, hard, Kaskaskia	35	448
Shale	8	456
Sand, lower 15 feet thin bands of sand and shale, Big Clifty	42	498
Shale, blue, soft	12	510
Lime, gray, moderately hard	5	515
Shale, gray, hard	5	520
Lime, white, hard	10	530
Shale, white, hard	4	534
Lime, between 540 and 550, two soft streaks of lime and one about two feet and one about six inches like thick whitewash	40	574
Shale, tough, hard, white	10	584
Lime, varying in color and hardness to 740	156	740
Lime, gray, sandy, with hard shells, probably Waverly, Blue Lick at 830..	150	890
Lime, white, soft, no grit	25	915
Lime, hard, flinty, gritty, cased at 918....	7	922
Lime, brown and white, soft	60	982
Lime, dark gray, mixed with white, white part very soft	18	1000
Lime, brown and white	40	1040
Lime, dark gray, hard	30	1070
Lime, dark, brown, hard	65	1135
Lime, black	9	1144
Lime, brown and gray shales	23	1167
Lime, gray	35	1202
Lime and shale, mixed with shells occasionally	70	1272
Shale, sandy, dark	3	1275
Shale, sandy, light gray	15	1290
Lime, gray, very hard, gas at 1355, about enough to burn three feet high out of casing, no change in rock	65	1355
Lime, black, hard	45	1400
Lime, gray, soft, shelly	10	1410
Lime, gray and mixed with sand	5	1415
Lime, white, sandy	70	1485
Shale, dove color, soft with hard shells of gray lime	35	1520
Gray sand and lime, show of oil at 1523, gas at 1531	19	1539
Shale, green and soft	17	1556

DEVONIAN SYSTEM.

Shale, brown Devonian	10	1666
Lime, dark, hard, gray	25	1691
Lime, white and gray mixed	10	1701
Lime, dark brown	15	1716
Lime, gray	5	1721
Lime, light gray, almost white, trace of oil, very hard	34	1755
Lime, brown, very hard	15	1770
Lime, gray, soft, white flaked	25	1795
Lime, white, hard	35	1830
Lime, blue, gray, trace of oil, little salt water	5	1835
Lime, white	25	1860
Sand, gray, show of oil, stopped on hard shell, strong flow of salt water	5	1865
Sand, hard, white	10	1876
Lime, gray, mixed with shale	25	1900
Lime, brown, moderately soft	10	1910
1100 feet of water in well.		
Lime, brown	15	1925
Lime, gray, very hard	5	1930
Lime, dark gray, trace of asphalt	5	1935
Lime, white, hard	15	1950
Lime, gray and white	35	1985
Lime, gray shale and lime mixed	5	1990
Lime, dark gray, changing to light gray	30	2020
Lime, blue gray	10	2030
Lime, light brown	55	2085
Shale, light gray	5	2090
Rock, light gray, shale or rock not determined	45	2135
Lime, gray	25	2160
Shale, blue gray	10	2170
Lime and gray shale in thin bed	15	2185

Closed about April 25, 1917.

(Top of Silurian and Ordovician indefinite.)

LOG No. 333.

HUNTER WELL No. 1.
Leitchfield.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Shale, sand and clay	32	32
Lime	40	72
Shale	28	100
Lime	35	135
Blue shale	20	155
Sand (Cypress)	40	195
Lime	20	215
Shale	10	225
Lime	37	262
Shale	13	275
Lime—Sulphur water at 450 and 540	295	570
Light brown lime—Water at 570 to 590	45	615
Gray lime—Cased at 690	75	690
Brown lime	75	765
Dark lime—Sulphur water	50	815
Black lime—Cased at 840—Gas show at 900	136	951
Black lime	9	960
Sandy black lime—Gas at 961	4	964

(Well starts in Chester and is all in Mississippian).

LOG No. 334.

HILL WELL.
Leitchfield.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	12	12
Sand	18	30
Lime	50	80
Sand (Cypress)	80	160
Shale	12	172
Lime—Gas at 320	288	460
Dark brown lime	20	480
Gray sandy lime	15	495
Brown lime—"Blue Lick" water at 505	50	545
Gray lime	199	744
White and brown lime—Cased at 762	18	762
Dark gray lime—Oil show at 785	57	819
Black lime	56	875
Dark gray lime—Gas show	70	945
Black lime and shale	268	1213

DEVONIAN SYSTEM.		
Black shale	137	1350
Gray and white lime	15	1365
White and brown lime	66	1431
Dark brown lime—Gas show at 1433	14	1445
Gray and white lime	65	1510
Sandy lime—Oil show at 1514	12	1522
White lime	35	1557
Brown lime	5	1562
White lime	6	1568
Brown lime	35	1603
Gray lime	57	1660

Base of Devonian System Undetermined.

LOG. No. 335. STINSON WELL NO. 1.
Leitchfield.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	12	12
Limestone	12	24
Crevice	14	38
Limestone	127	165
Blue Shale	2	167
Limestone	63	230
Gray Shale	5	235
Limestone	10	245
Gray shale	50	295
Black shale	20	315
Limestone—"Blue Lick" water at 333	18	333
Limestone—Cased at 410, Gas at 690	577	910
DEVONIAN SYSTEM.		
Black shale	126	1036
Shale and lime mixed	7	1043
Black shale	5	1048
Limestone—white	9	1057
Limestone—gray	28	1085
Limestone—dark	19	1104
Limestone—gray	12	1116
Limestone—dark—Oil show at 1116	5	1121
Limestone—brown	3	1124
Limestone—gray	13	1137
Limestone—brown	21	1158
Limestone—gray	18	1176
Limestone—white	34	1210
Limestone—dark—Oil show	20	1230
Limestone—brown	21	1251

Base of Devonian System Undetermined.

LOG No. 336.

ALLEN—WALLACE WELL.
Leitchfield.
Right Beaver.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	10	10
Lime	18	28
Blue shale	22	50
Lime	40	90
Sand	20	110
Lime	55	165
Sand (Cypress)	55	220
Shale and lime shells	9	229
Blue shale	10	239
Blue lime	9	248
Blue shale	13	261
Brown lime	16	277
Blue shale	1	278
Sandy lime	6	284
Blue shale	1	285
Lime—Sulphur water at 580	1011	1296
DEVONIAN SYSTEM.		
Black shale	160	1456
Very dark lime	14	1470
Gray lime	4	1474
Dark lime	5	1479
Gray lime	52	1531
Dark lime	9	1540
Light gray lime	64	1604
White lime—Gas show at 1609	17	1621
Brownish lime	29	1650
Dark lime	36	1686
Light lime—Salt water 1860	214	1900
Very dark lime	15	1915
Gray lime	22	1937
Light brown lime	28	1965
Gray lime	47	2012
Light brown lime	22	2034

(Well starts in Chester).

Base of Devonian and Silurian Systems Undetermined.

LOG No. 750. RECORD OF TUCKER WELL NO. 1.

Brady Oil & Gas Company, Emporium, Pa.

James Ross, Driller.

Begun August 17, 1918.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay (surface)	14	14
Big Clifty sand	70	84
Missing	6	90
Lime, gray	10	100
Lime, brown	5	105
Missing	3	108
Lime, gray	36	144
Lime, brown, sandy	35	179
Lime, gray	10	189
Lime, brownish	117	306
Shale or shaly	4	310
Lime, lime, gray, brownish	74	384
Mud	2	386
Lime, gray, brownish	31	417
Missing	41	458
Lime, light brown	24	482
Lime, gray, brownish	110	592
Lime, dark, brown	8	600
Samples missing, cases last time	151	751
Lime, light gray, hard	14	765
Lime, light gray, medium	35	800
Lime, light gray, hard	26	826
Lime, light dark, soft	10	836
Lime, light dark, hard	14	850
Lime, gray, hard	20	870
Lime, dark, medium	14	884
Lime, dark, hard	91	975
Lime, dark, medium hard	35	1010
Lime, dark medium soft	55	1065
Lime, dark, medium hard	122	1187
Lime, brown sandy, oil	10	1197
Lime, brown sandy, oil	8	1205
Lime, shelly	4	1209
Lime, black	29	1238
Lime, gray, white specks	6	1244
Lime, light gray, brownish	56	1300
Lime, black, sandy	8	1308
Black shale, Devonian	122	1420
Light and shale mixed, very dark	10	1430
Lime, gray with white specks	15	1445

Lime, dark	45	1490
Lime, brownish gray	12	1502
Lime, brownish gray	52	1554
Lime, brownish gray, dark	6	1560
Lime, brownish gray, dark	12	1572
Lime, bluish	6	1578
Lime, bluish	6	1584
Lime, bluish	40	1624

LOG No. 751. JOHN T. DUNN WELL NO. 1.

Leitchfield, 1918.

Begun February 8, 1918.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	39	39
Lime	4	43
Slate or marl, 14" conductor to 42 ft.	30	73
Sand, supposed to be the Big Clifty	58	131
Cave	5	136
Lime, St. Louis, St. Genevieve (water at 165 and 10" casing to 158)	29	165
Slate	20	185
Sand, no sample taken	15	200
Lime, St. Louis	50	250
Slate, soapstone	8	258
Lime, gray cased with 8" casing at 386 feet	70	328
Lime continued	52	380
Slate	4	384
Lime, gray	31	415
Lime, brown	50	465
Lime, gray, brown flakes	12	477
Lime, brown	10	487
Lime, brown, sulphur water	5	492
Lime, gray, soft	5	497
Lime, brown, some hard	13	510
Lime, brown, hard	15	525
Lime, gray, soft	5	530
Lime, brownish, 10 ft. soft then 10 ft. hard	20	550
Lime, gray, softer and medium	10	560
Lime, dark brown, harder	11	571
Lime, dark gray, white specks, soft	7	578
Lime, brown, hard	5	585
Lime, gray, softer, sulphur at 585	4	587
Lime, brown	18	605

Lime, very dark, oily, coffee grounds	5	610
Lime, very dark, brownish gray	17	627
Cased at 616 and 619, last 3-28-1918.		
Lime, light brown	2	629
Lime, brown and gray, softer and harder, no samples	53	682
Lime, dark gray, white specks	1	705
Lime, dark gray, sandy, inky black sulphur water	3	708
Lime, dark gray, white specks	4	712
Lime, sandy, oily	41	753
Lime, softer, cased last time at 758 feet, no samples	5	758
Lime, dark gray, some chert and hard streaks	353	1128
Lime, sandy specks	15	1143
DEVONIAN SYSTEM.		
Ohio shale	137	1280
Lime, gray, last screw sandy	38	1318
Lime, gray	15	1333
Lime, dark brownish gray	6	1339
Lime, gray	13	1352
Lime, sandy gray, place for 1st Ohio oil	8	1360
Lime, dark gray, soft flakes in last screw	14	1374
Lime, gritty, some very light specks	94	1468
Lime, gray, nearly white	5	1473
Lime, shade darker	6	1479
Lime, gray, shade lighter	16	1495
Lime, sandy, oil sand, little oil	10	1505
Lime, nearly white, drilling ceased	3	1508

Well finished April 29, 1918.

Authority, James Hancock, Driller.

LOG No. 752.

PATTERSON WELL NO. 1.

Near Olaten.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Slate	12	12
White lime, hard	15	27
Oil sand	5	32
Blue shale	16	48
White lime, hard	5	53
Blue shale	11	64
White lime, hard	31	95
Blue broken lime	9	104

Sandy lime	10	114
White lime	36	150
White lime	60	210
Brown lime	55	265
White lime	32	297
Oil sand	6	303
Gray lime	32	335
Blue Lick formation	61	396
Brown lime	4	400
Cased 8" hole at		400
White lime	2	402
Slate lime	2	404
White lime, hard	11	415
Gray lime	5	420
Brown lime	6	426
Brown and gray lime	5	431
Light brown lime, hard	5	436
Gas sand	10	446
Light brown lime	19	465
Gray lime, hard	5	470
Dark gray lime	44	514
Brown gray lime	8	522
Dark brown lime	23	545
Dark brown lime	32	582
Gray and brown lime, hard	8	590
Gray lime, hard	10	600
Dark gray lime	35	635
Blue and white lime	15	650
Dark gray lime, sandy	5	655
Brown lime, hard	35	690
Dark gray lime, hard	45	735
Black lime, soft	29	764
Dark gray lime, soft	71	835
Black lime, soft	90	925
Gray lime, soft	15	940
Oil sand, show of oil	6	946
Gray lime	11	957
Top of oil sand	10	967
Oil sand	9	976
Gray lime	59	1035
Gray sandy lime	20	1055
Blue shell lime	5	1060
Blue lime and slate	5	1065
Blue slate	23	1088
Black shale	184	1272

Black lime, hard	4	1276
Dark black lime	4	1280
Black gray lime	4	1284
Black lime, soft	6	1290
Black and gray lime	6	1296
Gray lime	4	1300
Hard light brown sand, show of gas	14	1314
Brown sand	20	1334
Brown sand, soft	10	1344
Black lime	6	1350
Black lime, soft	15	1365
Black lime, hard	15	1380
Gray lime	7	1387
White lime, soft	5	1392

GREEN COUNTY.

LOG No. 337.

RUSSELL FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	8	8
Gray lime	20	28
Brown lime	93	121
Gray lime	19	140
DEVONIAN SYSTEM.		
Black shale	48	188
White lime	7	195
Sandy lime	4	199
Shale	2	201
Gas well.		

LOG No. 338.

R. C. WHITE FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	20	20
Gravel	2	22
Lime	118	140
DEVONIAN SYSTEM.		
Black shale	45	185
Gray shale	10	195
White sand (lime?)	10	205
Lime shell	3	208
"Gas sand"	19	227
Gas well.		

LOG No. 339.

ADA TURNER FARM.
Highland.
(Partial record.)

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	325	325
DEVONIAN SYSTEM.		
Black shale	19	344
Salt water	at	379

LOG No. 340.

W. A. CHERRY FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Sandy lime	100	100
Gray lime	75	175
Gray shale	81	256
DEVONIAN SYSTEM.		
Black shale	42	298
Hard lime	8	306
White sand (lime?)	18	324
"Gas sand"	32	356
SILURIAN SYSTEM.		
Gray shale	25	381
Pink shale	14	395
Gas well.		

LOG No. 341.

W. O. PENICK FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	2	2
Lime	108	110
"Salt sand"	2	112
Dark lime	38	150
DEVONIAN SYSTEM.		
Black shale	50	200
Lime	25	225
"Gas sand"	24	249
Gas well.		

LOG NO. 342

BUCHANAN FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	6	6
Lime	242	248
White shale	10	258
DEVONIAN SYSTEM.		
Black shale	51	309
Gray lime	6	315
Soft white lime	26	341
"Gas sand"	21	362
Gas well.		

GREENUP COUNTY.

LOG No. 343.

RECORD OF UNITED FUEL-GAS CO.—TRANSYLVANIA OIL & GAS CO. JOINT WELL NO. 1.

Drilled on Geo. F. Bradley Farm, Big White Oak Creek, Completed June 6, 1918.

Strata	Top	Bottom	Thickness
Surface, gravel, etc.		12	12
Fresh water	12		
MISSISSIPPIAN SYSTEM.			
Big lime	12	87	75
Blue clay	87	140	53
Slate and shells	140	305	165
Sandstone	305	350	45
Slate	350	415	65
Limestone	415	548	133
Black slate	548	575	127
Dark shale	594	600	6
DEVONIAN SYSTEM.			
Brown shale (cased 794 ft.—8¼ in.)	675	985	310
White slate	985	1065	80
Show of gas	1065	1072	7
Ragland sand	1085	1120	35
Water at	1115		
SILURIAN SYSTEM.			
Niagara lime	1120	1420	300
White shale	1420	1430	10
Red rock (cased 1520 ft. 6 5-8)	1430	1550	120
Clinton sand	1605	1650	45
Show of oil at	1629		
Shale	1650	1667	17
Total Depth	1667		

CASING RECORD

10 inch No. 32—100 ft. pulled.
8 1-4 inch No. 24—794ft. left in well.
6 5-8 inch No. 17—1520 ft. pulled.

LOG No. 344.

RECORD OF UNITED FUEL-GAS CO.—TRANSYLVANIA OIL & GAS CO. JOINT WELL NO. 2.

Drilled on Sanford Bradley Farm, Big White Oak Creek,
Completed December, 1918.

Strata	Top	Bottom	Thickness
MISSISSIPPIAN SYSTEM.			
Surface, gravel, etc		10	10
Fresh water	20		10
Lime	20	55	35
Slate	55	100	45
Blue clay	100	300	200
Slate and lime	300	425	125
Sand	425	435	10
Lime	435	525	90
Black slate	525	600	75
White slate	600	675	75
Lime and black shale	675	725	50
Brown shale	725	815	90
Lime shell	815	825	10
Brown shale	825	925	100
Light shale	925	995	70
Lime, light, hard	995	1315	320
Light shale	1315	1325	10
Red rock	1325	1450	125
White slate	1450	1485	35
Red rock	1485	1500	15
Blue shale	1500	1510	10
Clinton sand	1510	1535	25
Blue shale	1535	1575	40
Slate and shells	1575	1610	35
Red rock	1610	1630	20
Slate	1630	1755	125
Lime	1755	1765	10
Slate and lime shells	1765	2301	536
Total depth of hole	2301		
Water at	432		
Show of oil and gas	1000		
Water—three bailers per hour	1015		
Water—hole full	1080		
Cave	1375	to 1425	

CASING RECORD

13 inch conductor—13 1-2 ft.
10 inch casing—106 ft. pulled.
8 1-4 inch casing—500 ft. pulled.
6 5-8 inch casing—1330 ft. pulled.
Devonian and Silurian Systems Indefinite.

HANCOCK COUNTY.

LOG No. 345.

NEWMAN WELL.
5 Miles S. of Hawesville.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	10	10
Sand	160	170
MISSISSIPPIAN SYSTEM.		
Blue slate (top of Chester?)	50	220
Blue lime	35	255
Dark slate	55	310
Lime	110	420
Red slate	25	445
Lime	75	520
Red slate	10	530
Gritty lime—Oil show at 535—water	25	555
White lime	80	635
White sand—water at 645	20	655
Gray lime—"Blue Lick" water at 830	225	880
Dark lime	300	1180
Gray lime	220	1400
Dark lime	110	1510
Gray lime	290	1800
Dark lime	50	1850
Gray lime	25	1875
Dark lime	25	1900
Gray lime	10	1910
Dark lime	55	1965
Dark slate	45	2010
DEVONIAN SYSTEM.		
Brown slate (Devonian)	78	2088
Gray lime (Devonian)	7	2095
Brown slate (Devonian)	30	2125
Gray lime	25	2150
White lime—Oil show at 2225	170	2320
Dark lime	10	2330
White lime	23	2353

HARRISON COUNTY.

LOG No. 346.

WELL AT CYNTHIANA.
(Partial record.)

Strata	Thickness			Depth
Soil	24			24
ORDOVICIAN SYSTEM.				
Dark gray lime	52			76
Light, fine-grained lime—sulphur water at 74	19			95
Gray lime	55			150
Very dark gray lime	at			175
Light dove-colored lime (Tyrone)	at	215	to	300
Light lime	at	350	to	600
Dark dove-colored lime	at	670	to	690
Light green shale	at			760
Light sandy lime (Calciferous)	at	785	to	1000

HART COUNTY.

LOG No. 347.

WELL ON DOG CREEK.

Strata	Thickness	Depth.
MISSISSIPPIAN SYSTEM.		
Soil	12	12
Gray lime	26	38
Blue shale	26	64
Hard lime	10	74
Blue shale	34	108
Gray lime	50	158
Dark lime	70	228
Light gray lime—salt water	50	278
Light gray sand	25	303
Gray lime	71	374
Dark gray sand	24	398
Gray lime	120	518
Dark gray sand	54	572
Light gray lime	30	602
Red lime	40	642
Very dark lime	93	735
Dark bastard sand—Oil show	12	747
Dark gray lime	178	925
Dark bastard sand	42	967
Very dark lime	138	1105
Lead-colored slate (Base of Mississippian)	5	1110

DEVONIAN SYSTEM.		
Black shale	105	1215
Gray lime	25	1240
Open sandy streak—Oil and gas shows	18	1258
Dark lime	14	1272
Dark sandy lime	8	1280
Light sandy lime—oil show	10	1290
Soft gray lime	40	1330
Base of Devonian Indefinite.		

LOG No. 348.

WELL ON DOG CREEK.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	9	9
Gray lime	56	65
Blue shale	4	69
Dark gray lime	1	70
Dark gray sand	20	90
Blue shale	12	102
Lime	28	130
Gray sand	7	137
Dark gray shale	10	147
Gray bastard sand	12	159
Dark gray shale	27	186
Gray lime	19	205
Coal	6"	
Dark gray shale	4	209
Gray lime	10	219
Dark shale	3	222
Gray lime	248	470
Brownish-gray lime	35	505
Hard gray sand	20	525
Gray lime	97	622
Dark bastard lime	178	800
Dark gray lime	15	815
Bastard lime and sand	25	840
Black bastard lime	80	920
Hard dark sand	30	950
Dark bastard lime	50	1000
Black bastard slate	40	1040
Black bastard lime	173	1213
Probably all Mississippian.		

DEVONIAN SYSTEM.

Black shale	105	1318
Hard gray sand	10	1328
Black slate	6	1334
Gray hard sand (?)	2	1336
Light gray sand (?)	23	1359
Dark gray sand (?)	6	1365
Hard bastard sand (?)	6	1371
Hard bastard lime	25	1396
Hard gray sand (?)	24	1420
Reddish gray sand (?)	10	1430
Light open sand (?)—strong salt water	17	1447

The "sand" given below the black shale was probably lime.

LOG No. 349.

CROGAN FARM.

Dog Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil and gravel	18	18
Gray lime	40	58
Yellow lime	40	98
White slate	7	105
Lime	5	110
White slate	35	145
Lime	175	320
"Blue Lick"	20	340
Lime	155	495
Sandy lime	30	525
"Blue stone"	15	540
Slate	10	550
Lime	25	575
Slate	8	583
Lime	192	775
Sandy lime	75	850
Very hard lime	250	1100
"Broken"	40	1140
White slate	5	1145
DEVONIAN SYSTEM.		
Black shale (Devonian)	80	1225
Brown, sandy lime—oil show	50	1275
Light brown lime	20	1295
White lime	105	1400

Very Irregular Record.

LOG No. 350.

POMEROY AND HAMILTON WELL.

1½ Miles S. W. of Upton.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	7	7
Lime	348	355
Limy shale	150	505
Dark shaly lime	290	795
DEVONIAN SYSTEM.		
Black shale (Devonian)	79	874
Siliceous lime	4	878
Brown lime	52	930
Dark shaly lime	30	960
Gray lime—salt water at 960	18	978
Dark shaly lime	33	1011
Red shale	5	1016
White shaly lime	22	1038
Dark slate	22	1060
Dark shaly lime	25	1085
Dark greenish slate	16	1101

HOPKINS COUNTY.

LOG No. 351.

EARLINGTON WELL.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	192	192
Shale	17	209
Shale and sand	9	218
Coal	1	219
Shale	45	264
Dark shale and thin coal	5	269
Shale	23	292
Sand with shale breaks	27	319
Hard cap	1	320
White sand—water	47	367
Black sand	2	369
Shale and coal stain	2	371
Sand	32	403
Shale	2	405
Sand—Oil show at 418	77	482
Shale	21	503
Sand	25	528
Shale	80	608
Sand	35	643
Shale	9	652
Sandy shale	19	671
Sand	130	801

Pebbly shale	12	813
Sand	6	819
Blue lime	13	831
Shale	13	844
Sand	78	922
Shale	15	937
Sand	5	942
Coal	3	945
Sand	105	1050
Shale	1	1051
Sand	46	1097
Shale	2	1099
Sand with shale breaks	23	1122
Sand	12	1134
MISSISSIPPIAN SYSTEM.		
Shale	4	1138
Lime	12	1150
Red shale	20	1170
Sand	5	1175
Shale	15	1190
Sand	14	1204
Blue slate	10	1214
Sand	11	1225
Limy shale	32	1257
Sand	6	1263
Black shale	9	1272
Soft shale	44	1316

JOHNSON COUNTY.

LOG No. 352. THOMAS OSBORN FARM.

Toms Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	39	39
Dark slate	126	165
Gray sand	210	375
Dark slate	95	470
White sand (base of Pottsville)	85	555
MISSISSIPPIAN SYSTEM.		
"Big lime"	159	714
Dark sand	136	850
Dark slate	170	1020
Black slate	15	1035
Gray sand	90	1125
White slate	20	1145
Black slate (Sunbury?)	35	1180
Dark sand (Berea?)	30	1210

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Black shale	400	1610
White slate	105	1715
Lime	97	1812

LOG No. 353.

FREDERICK MURRAY FARM.
Toms Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	19	19
Black slate	186	205
White sand (base of Pottsville)	399	604
MISSISSIPPIAN SYSTEM.		
"Big lime"	156	760
Blue sand	40	800
Black slate	269	1069
Gray sand	75	1144
Gray slate and shells	61	1205
DEVONIAN SYSTEM.		
Black shale (Devonian?)	75	1280
White slate (Devonian?)	68	1348
Brown shale (Devonian?)	327	1675
White slate	125	1800
White lime	132	1932

LOG No. 354.

M. F. SLOAN FARM.
Toms Creek.

Strata	Thickness	Depth
Soil	21	21
PENNSYLVANIAN SYSTEM.		
White sand	384	405
MISSISSIPPIAN SYSTEM.		
White lime—"Big lime"	145	550
Slate and shell	330	880
Light sand	80	960
White slate	30	990
DEVONIAN SYSTEM.		
Black slate	480	1470
White slate	147	1617
Lime	383	2000

LOG No. 355.

BARNETTS CREEK.

Lessee, Leroy Adams Oil Co. Casing Head Elevation 702 Ft.
Production 5 Barrels Light Green Oil.
Total Depth 1035 Feet.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sandstone, Pottsville	460	460
MISSISSIPPIAN SYSTEM.		
Grey shale	10	470
"Mauch Chunk" "Big Lime," Gas 490, St. Louis	69	539
Pale green to grey shaly sandstone, Waverly	369	908
"Sunberry" shale	11	919
"Wier" sand (oil 919-953)	34	953
Hard sandy shale—Berea	77	1030
DEVONIAN SYSTEM.		
Black shale	5	1035

LOG No. 356.

MUD LICK CREEK.

Lessor, Zollie Ward. Lessee, Leroy Adams Oil Co.
Casing Head Elevation 613 Feet.
Total Depth 1950.

Strata	Feet	Feet
PENNSYLVANIAN SYSTEM.		
Sandstone—gas and little oil, 200-205		280
Shale	280	295
Sandy shale	295	323
Fine grained sandstone	323	335
MISSISSIPPIAN SYSTEM.		
Sandy shale—oil soaked and gas—Big Injun series	417	430
Waverly shaly sands	430	782
Sunberry	782	787
Berea sand fair gas blow	787	800
Berea sand	800	875
Berea sand but more gas	875	885
Sandy shale (Transitional)	885	900

DEVONIAN SYSTEM.		
Black and varied colors	900	1510
Brown coffee shale	1510	1520
Oil soaked and gassy limestone —"Corniferous"	1520	1534
Limestone. (Salt and pepper)	1534	1585
Sandy lime fresh water—2 bails. Oriskany?	1585	1600
Lime	1600	1670
Limey shale	1670	1675
Limestone, hard	1675	1695
Strong gas—very poisonous. Large sulphur percentage	1695	1700
Limestone	1700	1820
SILURIAN SYSTEM.		
Grey shale	1820	1825
Limestone—Manlius of Silurian?	1825	1950

LOG No. 357.

J. H. STAMBAUGH FARM.

Toms Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand and gravel	33	33
Black slate	12	45
White sand	145	190
White slate	8	198
White sand	81	279
Black slate	4	283
White sand (base of Pottsville)	197	480
MISSISSIPPIAN SYSTEM.		
"Big lime"	123	603
White slate	200	803
Slate and shells	151	954
Black sand	70	1024
Gray sand	28	1052
DEVONIAN SYSTEM.		
Black shale (Devonian?)	128	1180
White shale (Devonian?)	50	1230
Black shale (Devonian?)	154	1384
White sand and shell (Devonian?)	16	1400
Black shale (Devonian?)	161	1561
White slate	159	1720
Gray lime	383	2103

Devonian record irregular.

LOG No. 358.

NANCY WITTEN FARM.
Toms Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	95	120
Black slate	20	140
Black sand	368	508
White sand	8	516
Black slate (base of Pottsville)	158	674
MISSISSIPPIAN SYSTEM.		
"Big lime"	80	754
Gray sand	266	1020
Slate and shale	70	1090
Gray sand	38	1128
Slate and shells	494	1622
DEVONIAN SYSTEM.		
Black shale	169	1791
White shale	539	2330
Lime	10	2340
Black slate	145	2485

Devonian record irregular, base indefinite.

LOG No. 359.

J. B. VANHOOSE FARM.
Toms Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	55	55
Black slate	185	240
Brown sand	20	260
White slate	30	290
Gray sand	103	393
White slate	42	435
White sand (base of Pottsville)	265	700
MISSISSIPPIAN SYSTEM.		
White lime—"Big lime"	150	850
Dark sand	100	950
White slate	244	1194
Gray sand	75	1269
Slate shell	56	1325
DEVONIAN SYSTEM.		
Black slate	500	1825
White slate	143	1968
Black shale	23	1991
Gray lime	15	2006

LOG No. 360.

J. C. MURPHY FARM.
Toms Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand and gravel	30	30
Black slate	50	80
White sand	80	160
Black slate	5	165
White sand (base of Pottsville)	370	535
MISSISSIPPIAN SYSTEM.		
White lime—"Big lime"	158	693
Dark shale	150	843
White shale	209	1052
Gray sand	73	1125
White slate and shell	50	1175
DEVONIAN SYSTEM.		
Black shale	450	1625
White slate	155	1780
White lime	90	1870
Dark lime	92	1962

Devonian record irregular.

LOG No. 361.

W. A. STAPLETON FARM.
Toms Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	21	21
Slate	140	161
Black sand	35	196
White sand (base of Pottsville)	349	545
MISSISSIPPIAN SYSTEM.		
Lime	155	700
Black slate	235	935
Slate and shells	95	1030
Gray sand	90	1120
White slate	30	1150
DEVONIAN SYSTEM.		
Black shale	482	1632
White slate	139	1771
Lime	94	1865

LOG No. 362.

W. H. CONLEY FARM.

Pigeon Creek of Little Paint Creek. Alt. 980 feet. August 17, 1918.
Production 1,000,000 cu. ft. gas.

Strata		Thickness	Depth
PENNSYLVANIAN SYSTEM.			
Soil		12	12
Blue shale		38	50
Coal		1½	51½
Blue shale		38½	90
White sand—Oil shows		220	310
Sandy shale		30	340
Slate		65	405
White sand		35	440
Slate		5	445
Shell		7	452
Black slate (base of Pottsville)		23	475
MISSISSIPPIAN SYSTEM.			
"Little lime"		10	485
Blue shale		20	505
"Big lime"		80	585
Sand		250	835
Blue shale		15	850
Light brown sand—Gas		60	910
Greenish blue sand		20	930
Brown sand		20	950
Black shale (Sunbury)		20	970
Brown sand (Berea?)		60	1030
DEVONIAN SYSTEM.			
Black shale	(Devonian?)	360	1390
Black slate and limy shells	(Devonian?)	10	1400
Black shale	(Devonian?)	50	1450
Greenish white shale		120	1570
Brown shale		7	1577
Brown lime—Gas		20	1597
Dark blue lime		15	1612
White lime		28	1640

LOG No. 363.

LITTLE MINE FORK OF PAINT CREEK.

Lessee P. J. White.

Casing Head Elevation 850. Total Depth 2005.

Strata	Thickness	Depth	
PENNSYLVANIAN SYSTEM.			
Soil and shale	41	41	
Massive sandstone	144	185	"Salt" sand
Shale	85	270	
Shaly sandstone and calcareous shale	65	335	
Shaly lime	65	400	"Little lime"
MISSISSIPPIAN SYSTEM.			
Pencil cave	5	405	"Big lime"
Lime	77	482	
Slate	46	528	
Sandstone	116	644	"Big Injun"
Slate	156	800	
Black slate	10	810	"Sunberry"
Sandstone	66	876	"Berea"
DEVONIAN SYSTEM.			
Black shale	269	1145	
White shale	85	1230	
Sandy lime (Corniferous)	13	1243	
SILURIAN SYSTEM.			
Sandy lime	587	1830	
Red and pink shales	175	2005	"Clinton"

LOG No. 364. JENNYS CREEK.

Lessor, Sherman Rice, No. 1. Lessee, L. C. White.

October 20, 1917. Completed February 14, 1918.

Total Depth 1063 feet.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil, sandy		20
Coal	5	25
Quicksand	23	48
Lime	32	80
Sand, white—water	40	120
Shale, blue	60	180
Lime, sandy—gas	15	195
Shale	15	205
Lime	10	215
Sand, white	5	220
Lime	20	240
Sand, salt, dark oil	30	270
Shale, blue	60	330
Sand gas in bottom, very hard	170	500
Shale, blue	80	580

MISSISSIPPIAN SYSTEM.

Sand, Maxon, little gas	7	587
Lime, sandy	10	597
Lime, St. Louis, little gas about 665, and little water, about 670—1 bbl. per day salt water	110	707
Slate, green	25	732
Waverly shale	263	995
Hard grey sandy shale	7	1002
Shale, brown	18	1020
Shale, black	5	1025
Sandy shale, show of oil	9	1034
Sand, Berea	29	1063
Lime, sandy and hard	1	1064

Sand pumpings had odor of oil all thru from 1025 to 1063.

LOG No. 365.

JENNYS CREEK.

Lessor, Sherman Rice, No. 2. Lessee, L. C. White.
Started April 20, 1918. Completed May 4, 1918.
Producing Sand, Pottsvile. Total Depth, 356 feet.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil		17
Gravel and sand	10	27
Sandstone	4	31
Lime	9	40
Blue shale, very sticky, muds up	23	63
Lime	20	83
White sand—water	42	125
Blue shale	58	183
Lime	15	198
Blue shale—little gas	34	232
Lime	20	252
Sandy lime	16	268
Dark gray sand—show of light amber oil..	24	292
Pipe clay	5	297
Light gray sand—fair show of very heavy green oil	15	311
Condition of this sand very rotten—salt water in abundance with oil.		
Shale and slate	45	356

8¼ casing set at 179 feet.

Water conditions so bad in shallow sands, which evidently are salt sands, we could do nothing with the oil.

LOG No. 366.

JENNYS CREEK.

Lessor, Sherman Rice, No. 3. Lessee, L. C. White.
Started June 6, 1918. Completed June 21, 1918.
Producing Sand, Pottsville. Total Depth, 314 feet.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil		36
Lime	21	57
Sand, very white, small show of heavy black oil	40	97
Lime	5	102
Slate	15	117
Pipe clay—salt water	20	137
Blue shale	98	235
Lime—litt'e gas	7	242
Dark gray sand—little water		
Dark gray sand—small show amber oil		286
Dark gray sand—very rotten—heavy dose of water		314

6¼ casing at 164 feet.

Water conditions so bad in shallow sands, which evidently are salt sands, we could do nothing with the oil.

LOG No. 367.

C. N. WILLIAMS FARM.

One Mile South of Red Bush, Upper Laurel Creek.
Elevation of surface 870.

Strata	Feet
PENNSYLVANIAN SYSTEM.	
Soil	20
Slate	50
Sand	150
Mud	33
Sand—settling sand	48
Mud	7
Black lime	5
Mud	6
Hard sand	7
White lime	26
White lime	98
Sand	12
Slate	221
Sand	33
Slate	3

Hard cap	3
Slate	6
Slate and shells	8
Hard	2
Slate—Sunbury	39
Brown sand	20
Gas at 832.	
Berea	817 to 909
Total depth 909	

LOG No. 368.

WELL NEAR HEAD OF PICKLE FORK OF BARRETTS CREEK.

Leroy Adams (Federal Oil Co.), lessee.

Elevation surface—950 feet—25 feet.

Strata	Thickness	Depth	
PENNSYLVANIAN SYSTEM.			
Sand	0 to	20	
Shale	73	93	
Shaley sand	95	188	
Black shale	10	198	
Sandstone	102	300	
Dark shale	30	330	
Sandstone	26	556	
MISSISSIPPIAN SYSTEM.			
Shale	4	560	
Lime	10	670	Big lime.
Grey shaly sandstone..	345	1015	Lower 80′ of this Weir.
Black shale	8	1023	Sunbury shale.
"Upper" Berea	25	1048	Berea sandstone.
Shale	4	1052	
Shaly sand	30	1082	
Shale	13	1095	

LOG No. 369.

BED ROCK OIL CO., W. H. CONLEY No. 3.

On the Head of Pigeon Creek of Little Paint Creek.

Elevation surface 935.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Drift	0 to	12
Shale—show black oil..	58	70
Sand-fresh water at 180	245	315
Sandy shales	35	440

MISSISSIPPIAN SYSTEM.

Gray shale	10	450		
Lime	8	458		
Shale, gray	5	463		
White lime	6	469		
Gray shale	10	479		
Lime	3	482		
Gray shale	3	485		
White lime	90	575	Big lime. Casing set at	
Sandy lime	155	730	497.5.	
Gray shale	40	770		
Sand	5	775		
Sand	5	780	212,000 cu. ft. gas.	
Hard fine sand	5	785		
Black shale	40	825		
Gray sand	7	832	555,680 cu. rt. gas.	
Gray sand	8	840	681,120 cu. ft. gas.	Weir
Gray sand	8	848	823,970 cu. ft. gas	
Gray sand	20	868	979,000 cu. ft. gas.	
Blue shales	22	890		

Rock pressure 285 pounds.

KNOTT COUNTY.

LOG NO. 376.

BALLS FORK
5¼ Miles From Hindman.
Mouth of Mill Branch.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Light shale	10	20
Sand	4	24
Coal	5	29
Dark slate	5	34
Gray sand	32	66
Coal	3	69
Light slate	15	84
Sand	16	100
Slate	20	120
Gray sand	27	147
Coal	3	150
Black Slate	16	166
White sand	44	210
Coal	4	214
Black slate	34	248
Gray sand	15	263

Light slate	60	323
White sand	12	335
Light slate	30	365
Coal	4	369
Dark slate	70	439
Gray sand	12	451
Light slate	54	505
Sand	20	525
Black slate	128	653
White sand	37	690
Dark slate	62	752
White sand	25	777
Shelly slate	188	965
White sand (Beaver)—Gas and salt water	215	1180
Black slate	20	1200
Sand (Horton)	126	1326
Dark slate—Salt water	12	1338
White sand (not all sand)—Salt water	312	1650

This well reaches down into the Mississippi System but does not touch the Big Lime. It is impossible to note the change from the Pottsville into the Mauch Chunk, for the driller did not record the break in the last 312 feet.

LOG NO. 377.

J. M. CONLEY FARM.

Head of Salt Lick of Right Beaver.

Strata	Thickness	Depth
Drift	22	22
PENNSYLVANIAN SYSTEM.		
Slate	30	52
Sand	20	72
Coal	2	74
Dark slate	45	119
Gray sand	3	122
Dark slate	23	145
White sand	49	194
Slate	54	248
White sand	47	295
Dark slate	50	345
White sand	48	393
Dark slate	45	438
White sand	30	468

Dark slate	70	538
Gray and white sand (Beaver-Horton)	300	838
Coal	2	840
Dark slate	39	879
Gray and white sand (Pipe)—salt water	105	984
Dark slate	25	1009
Gray sand	15	1024
MISSISSIPPIAN SYSTEM.		
Slate	156	1180
White sand (Maxon)—oil and salt water	28	1208

LOG No. 378.

WEBB FARM.
Right Beaver above Jones Fork.

Strata	Thickness	Depth
Soil	35	35
PENNSYLVANIAN SYSTEM.		
Coal	5	40
Sand	40	80
Black slate	80	160
Light s'ate	70	230
Coal	3	233
Slate and sand	207	440
White sand (Beaver)	40	480
S'ate	20	500
White sand (Horton)—gas, oil and salt water	220	720
Slate	5	725
Sand (Pike)—salt water	127	852
Slate	35	887
Black sand	25	912
White sand (Bradley stray)	94	1006
MISSISSIPPIAN SYSTEM.		
Black slate.		

LOG No. 379.

WM. TRIPLETT FARM.
Jones Fork of Right Beaver.

Strata	Thickness	Depth
Sand and gravel	31	31
PENNSYLVANIAN SYSTEM.		
S'ate	9	40
Coal	3	43
Slate and she'ls	80	123
Black shale	27	150

Sand	50	200
Slate	30	230
Sand	20	250
Black slate and shells	150	400
Sand—Gas	10	410
Slate	25	435
Sand (Beaver)	180	615
Slate	30	650
Sand (Horton)	130	780
Slate and sand	100	880
Sand (Pike)—black oil at 990	110	990

MISSISSIPPIAN SYSTEM.

Black slate	10	1000
Slate and shells	51	1051
Sand (Maxon)	45	1096

LOG No. 380.

LINDSAY TRIPLETT FARM.

Jones Fork of Right Beaver.

Strata	Thickness	Depth
Soil	36	36
PENNSYLVANIAN SYSTEM.		
Slate	6	42
Black sand	160	202
Gray sand	110	312
Slate and shells	160	472
Gray sand (Beaver)	100	572
Slate	5	577
White sand (Horton)—salt water	203	780
Slate and shells	75	855
Black sand	20	875
Slate	25	900
White sand (Pike)	125	1025
MISSISSIPPIAN SYSTEM.		
Slate	25	1050
White sand (Maxon)	75	1125
Slate	20	1145
White sand (Maxon)	30	1175
Black slate	5	1180
White sand (Maxon)—salt water	32	1212

LOG No. 381. **WM. INMAN FARM.**
Rock Fork of Right Beaver.

Strata	Thickness	Depth
Soil	24	24
PENNSYLVANIAN SYSTEM.		
Slate	30	54
Sand	12	66
Slate	19	85
Coal	2	87
Slate	45	132
Sand	15	147
Slate	41	188
Sand—salt water	45	233
Slate	68	301
Sand	8	309
Slate	127	436
Sand	20	456
Slate	6	462
Sand	18	480
Slate	8	488
White sand	79	567
Slate (Beaver)	3	570
White sand Gas and salt water	115	685
Slate	2	687
Sand	22	709
Slate	38	747
White and gray sands (Horton)—salt water	124	871
Black slate	2	873
Gray sand—oil show	20	893
Black slate	2	895
White sand (Pike)—salt water	121	1016
MISSISSIPPIAN SYSTEM.		
Black slate	35	1051
White sand (Maxon)—oil and salt water	106	1157

LOG No. 382. **ESTHER HORTON FARM.**
Rock Fork of Right Beaver.

Strata	Thickness	Depth
Soil	21	21
PENNSYLVANIAN SYSTEM.		
Slate	100	121
Sand	14	135
Slate	41	176
Sand	36	212
Slate	3	215
Sand	35	250
Slate	151	401

Sand	9	410
Slate	35	445
White sand Beaver)	213	658
Coal	2	660
Sand	30	690
Coal	2	692
Slate	31	723
Sand (Horton)—oil	89	812
Slate	12	824
Black sand	11	835
Black slate	9	844
Sand	13	857
Slate	5	862
White sand (Pike) gas, oil and salt water	136	998
MISSISSIPPIAN SYSTEM.		
Black slate	17	1015
Sand (Maxon)—gas	124	1139

LOG No. 383. ANDY COBURN FARM.

Rock Fork of Right Beaver.

Strata	Thickness	Depth
Drift	26	26
PENNSYLVANIAN SYSTEM.		
Slate	38	64
Sand	16	80
Coal	6	86
Slate	9	95
Sand	20	115
Slate and red shale	145	260
Coal	8	268
Slate	67	335
Sand	50	385
Slate	77	462
Sand	10	472
S'ate	74	546
Sand Beaver)—oil and gas	148	694
Slate	14	708
Sand (Horton)—salt water	115	823
Slate	14	837
Gray sand } (Pike) salt water	120	957
Slate } (Pike)	28	985
White sand } (Pike)	126	1111
Slate	35	1146
MISSISSIPPIAN SYSTEM.		
Sand and slate	27	1173
Gray and white sands (Maxon) salt water	31	1204
Black slate	18	1222
White sand (Maxon) salt water	41	1263

LOG No. 384. ANDY COBURN FARM.
Rock Fork of Right Beaver.

Strata	Thickness	Depth
Soil	20	20
PENNSYLVANIAN SYSTEM.		
Slate	39	59
Sand	21	80
Slate	12	92
Coal	8	100
Sand	42	142
Slate	48	190
Sand	48	238
Slate	242	480
Sand (Beaver)—gas and salt water	228	708
Slate	44	752
Sand	20	772
Slate—salt water	16	788
Sand—(Horton)	63	851
Black slate	12	863
Gray sand	9	872
Black slate	9	881
White sand (Pike)	52	933
Black slate (Pike)	4	937
White sand (Pike)	82	1019
MISSISSIPPIAN SYSTEM.		
Black slate	28	1047
White sand (salt sand)	51	1098
Slate and shells (salt sand)	21	1119
White sand (salt sand) salt water	29	1148

LOG No. 385.
ROCK FORK JUST BELOW BRUSHY FORK. W. R. BOLEN NO. 1.
Lessee, Pennagrade Oil and Gas Co.
Completed July 1916. Production 4,680,000 cu. ft. gas.
Producing Sand "Big Lime."
Casing Head Elevation 950 Aneroid. Total Depth 1635 feet.

Strata	Thickness	Depth
Drift 20 feet 10 inch casing		20
PENNSYLVANIAN SYSTEM.		
White sand	5	25
Coal	5	30
Dark slate	120	150
Dark sand 8 inch casing	30	180
Slate	5	185
Sand	30	215
Coal	5	220
Slate	20	240

Sand	70	310
Slate	15	325
Sand	95	420
Slate	15	435
Sand	45	480
Slate	280	760
Sand	148	908
Break	2	910
Sand (water at 950)	80	990
Break	10	1000
Sand (little oil at 1060 feet)	170	1170
Slate	10	1180
Sand	40	1220
Shale	20	1230
Sand	40	1270
MISSISSIPPIAN SYSTEM.		
Slate	30	1300
"Maxon" sand (a little water and oil at 1305)	123	1423
Black slate	14	1437
Sandstone, light sandy	13	1451
Slate and shells	25	1476
"Little" lime	15	1491
"Pencil Cave" shale	9	1500
"Big Lime"		
Gas in Big Lime at 1630	135	1635

4,680,000 cu. ft. gas, open flow 540 pounds Rock Measure.
Well completed July, 1916.
Not shot.
1440 6 5-8 inch casing.
1637 2 inch tubing.
Elevation 945 feet.
A. B. Brode and Son, Contractors.
S. L. Anderson, Driller.
135 feet is not the full thickness of the "Big Lime" formation.

KNOX COUNTY.

LOG No. 386. MADELINE GRAY FARM.

Grays Station.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	20	20
Shale	80	100
White sand	215	315
Black shale	30	345
Sand	150	495

Shale		8	503
Sand		129	632
Coal		3	635
Sand (base of Pottsvile)		275	910
MISSISSIPPIAN SYSTEM.			
Red shale		40	950
Black shale		20	970
Sand		10	980
Red shale		25	1005
Black shale		24	1029
Red shale		41	1070
Lime		10	1080
Black shale		28	1108
Gray lime—"Little lime"		70	1178
Soft shale		5	1183
White lime	"Big lime"	90	1273
Black lime	"Big lime"	4	1277
Gray lime	"Big lime"	24	1301
Blue lime	"Big lime"	20	1321
Gray lime	"Big lime"	15	1336
White lime	"Big lime"	14	1350
Gray lime	"Big lime"	19	1369
Sand—"Big Injun"		27	1396
Black shale	(Waverly)	24	1420
White shale	(Waverly)	5	1425
Dark shale	(Waverly)	15	1440
Dark sand	(Waverly)	5	1445
Dark shale	(Waverly)	10	1455
Sand and shale	(Waverly)	85	1540
Sand, lime and shale	(Waverly)	32	1572
Light sand	(Waverly)	15	1587
Light shale	(Waverly)	13	1600
Sand and shale	(Waverly)	15	1615
Lime and shale	(Waverly)	50	1665
DEVONIAN SYSTEM.			
Black shale	(Devonian)	120	1785
White shale	(Devonian)	5	1790
Sand		5	1795
Light shale		25	1820
Lime		2	1822
Light shale		30	1852
Shale and sand		48	1900
Light shale		30	1930
Lime		5	1935
Light shale		20	1955
Sand		7	1962
Sand and shale		12	1974

LOG No. 387. MALINDA GRAY FARM.
Lynn Camp Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	20	20
Shale	50	70
Sand	48	118
Shale	39	157
Sand	25	182
Shale	18	200
Sand	40	240
Shale	128	368
Sand (Jones sand)	66	434
(All Pottsville).		

LOG No. 388. MALINDA GRAY FARM.
Lynn Camp Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Gravel and sand	20	20
Sand	60	80
Shale	82	162
Sand	53	215
Shale	51	266
Sand	41	307
Shale	123	430
Sand (Jones)	59	489
Shale (Jones)	12	501
Sand (Jones)	101	602
Coal and shale	108	721
Sand	108	721
(All Pottsville).		

LOG No. 389. CALEB POWERS FARM.
Near Whitley County Line.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Sand	15	25
Shale	325	350
Sand	45	395
Slate	50	445
Sand (Jones) (Beaver?)	200	645
Slate	5	650
Sand (Horton?)	100	750
Coal	4	754
Slate	5	759
Sand (Pike?)	151	910
(All Pottsville).		

LOG No. 390.

BRYANT FARM.
Near Corbin.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	16	16
Slate and shells	69	85
Coal	1	86
Sand	124	210
Slate and shells	20	230
Coal	3	233
Slate and shells	17	250
Sand	185	435
Slate	15	450
Sand	20	470
Slate	2	472
Sand	13	485
Slate	5	490
Sand	38	528
Coal	7	533
Slate	5	540
Sand	55	595
Slate	40	635
Slate and shells	170	805
Sand	15	820
Slate and shells	30	850
MISSISSIPPIAN SYSTEM.		
Red rock	5	855
Slate	5	860
Red rock	10	870
Slate and shells	75	945
Lime	10	955
Slate	15	970
Lime	15	985
Slate	4	989
Lime	3	992
Slate	4	996
Lime	6	1002
Slate	3	1005
Lime	285	1290
Slate	75	1365
Lime	15	1380
Slate	35	1415

LOG No. 391.

WELL AT BARBOURVILLE.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Dark shale	90	90
Sand	125	215
Dark shale	25	240
Sand and black shale	25	265
Sand	75	340
Sand and black shale	78	418
Sand	42	460
Sand and dark shale	75	535
Sand—oil and salt water	55	580
(All Pottsville).		

WELL AT BARBOURVILLE.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	23	23
Sand	27	50
Shale	45	95
Slate	65	160
Slate and shale	40	200
Sandy lime	5	205
Slate and shells	110	315
Gray lime ?)	8	323
Slate	27	350
Sand	68	418
Slate	2	420
Sand—oil at 430	45	465
(All Pottsville).		

LOG No. 392.

C. P. KENNEDY FARM.
East of Barbourville.

Strata	Thickness	Depth
Loam	38	38
PENNSYLVANIAN SYSTEM.		
Black sand	22	60
Coal	3	63
Black slate	7	70
Gray sand	15	85
Black slate	70	155
Coal	4	159
Black slate	6	165
Gray sand	21	186
Black slate	19	205
Gray sand—oil show at 210	35	240

Black slate	68	308
Gray sand	27	335
Black slate	15	350
White sand—oil show at 385	95	445
Black slate	18	463
Gray sand	107	570
Black slate and shells	25	595
White sand	75	670
Black shale	10	680
Black slate	40	720
White sand—salt water at 743	43	763
Black slate	37	800
Brown sand	60	860
Black shale	10	870
White sand	105	975
Black slate	47	1022
White sand	15	1037
Black slate	23	1060
White sand (base of Pottsville)	15	1075
MISSISSIPPIAN SYSTEM.		
Blue lime	15	1090
Red rock	18	1108
White sand	5	1113
Red rock	32	1145
Black slate and shells	63	1208
Red rock	20	1228
Blue slate	32	1260
Brown sand—oil show at 1270	26	1286
Blue slate	32	1260
Blue lime	15	1325
Blue slate	65	1390
Brown lime—gas show at 1395	12	1402
White slate	10	1412
White lime—"Big lime"—gas show at 1470	143	1555
Slate and shells	260	1815
Blue "flint"	15	1830
Gray sand	55	1885
White slate and shells	20	1905
DEVONIAN SYSTEM.		
Black shale	145	2050
White slate and shells	135	2185
Pink slate	55	2240
White slate	15	2255
Red rock	25	2270
Slate and shells	230	2500

Note: Base of Devonian undefined.

LOG No. 393.

PAYNES CREEK.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	6	6
Sand	14	20
Black shale	35	55
Coal	3	58
Slate and shale	25	83
Sand	5	88
Shale	20	108
Sand	12	120
Shale and slate	64	184
Black shale	18	202
Sand	30	232
Shale	150	382
Sand	40	422
Sand and slate	52	474
(All Pottsville).		

LOG No. 394.

PAYNES CREEK.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	12	12
Sand	4	16
Shale	4	20
Sand	40	60
Slate	115	175
Sand	10	185
Shale	127	312
Sand	10	322
Slate	18	340
Sand	10	350
Shale	60	410
Sand	80	490
Slate	20	510
Sand	60	570
Shale	38	608
Sand	222	830
Shale	35	865
Sand and shale	50	915
Coal	3	918
Sand	32	950
Shale	4	954
Sand	49	1003
(All Pottsville).		

LOG No. 395. WM. CARNES FARM.
Road Fork of Stinking Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	29	29
Slate	21	50
Lime and sand	50	100
Coal	2	102
Slate and lime	48	150
Sand	25	175
Slate and lime	50	200
Coal	6	206
Slate and sand	69	275
Slate	25	300
Sand—gas show at 307	50	350
Slate and lime	50	400
Black slate	55	455
Broken slate	20	475
White sand	115	590
Slate and sand	40	630
Sand (base of Pottsville)	390	1020
MISSISSIPPIAN SYSTEM.		
Black lime	20	1040
Sand	10	1050
Black lime	25	1075
Sand	225	1300
Slate and shells	60	1360
Sand and lime	10	1370
Red rock	15	1385
Lime and shells	35	1420
Sand	5	1425
Red rock	50	1475
Shells	35	1510
Slate and sand	50	1560
Sand	35	1595
Black lime	15	1610

LOG No. 396. J. G. BAKER FARM.
Stinking Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	12	12
Coal	4	16
Lime (?)	150	166
Slate	200	366
White sand	74	440
Slate	260	700
Sand (base of Pottsville)	400	1100

MISSISSIPPIAN SYSTEM.		
Shell	60	1160
"Broken"	40	1200
Lime	125	1325
Shell	40	1365
Sand—oil show at 1385	75	1440
Slate	60	1500
Red rock	40	1540
Red rock and shale	160	1700
Black lime	50	1750
Slate	47	1797

LOG No. 397. E. HAMMOND FARM.
Stinking Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	20	20
Slate	92	112
Lime (?)	5	117
Sand	11	128
White sand	22	150
Slate	140	290
Sand	10	300
Slate and shale	197	497
Sand—oil show at 572	75	572
Slate	153	725
Sand	48	773
Black slate	10	783
Sand—oil show at 826	67	850
(All Pottsville).		

LOG No. 398. ANTHONY MILLS FARM.
Goose Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	6	6
Slate	1	7
Gravel	9	16
Slate	74	90
Coal	7	97
Fire-clay	1	98
Slate	55	153
Sand	20	173
Shale	10	183
Slate	26	209
Sand	15	224
Slate	52	276
Sand	7	283
Slate	92	375
Sand	14	389
(All Pottsville).		

LOG No. 399.

ANDERSON FARM—No. 2.
Big Richland Creek near R. R. Crossing.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	32	32
Shale and clay	28	60
Shale	28	88
Sand	12	100
Shale	50	150
Sand	43	193
Shale	14	207
Sand	15	222
Slate	26	248
Sand—oil show	8	256
(All Pottsville).		

LOG No. 400.

ANDERSON FARM—No. 3.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	22	22
Sand	15	37
Slate	55	92
Sand	51	143
Slate	17	160
Sand	20	180
Shale	33	213
Sand	15	228
Slate	25	253
Sand—gas	10	263
Slate	12	275
Sand	10	285
Slate	30	315
Sand	40	355
Slate	10	365
Brown shale	15	380
Slate	26	406
Sand	22	428
Slate	16	444
Sand	62	508
Slate	9	517
Sand	15	532
(All Pottsville).		

LOG No. 393.

PAYNES CREEK.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	6	6
Sand	14	20
Black shale	35	55
Coal	3	58
Slate and shale	25	83
Sand	5	88
Shale	20	108
Sand	12	120
Shale and slate	64	184
Black shale	18	202
Sand	30	232
Shale	150	382
Sand	40	422
Sand and slate	52	474
(All Pottsville).		

LOG No. 394.

PAYNES CREEK.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	12	12
Sand	4	16
Shale	4	20
Sand	40	60
Slate	115	175
Sand	10	185
Shale	127	312
Sand	10	322
Slate	18	340
Sand	10	350
Shale	60	410
Sand	80	490
Slate	20	510
Sand	60	570
Shale	38	608
Sand	222	830
Shale	35	865
Sand and shale	50	915
Coal	3	918
Sand	32	950
Shale	4	954
Sand	49	1003
(All Pottsville).		

LOG No. 395. WM. CARNES FARM.
Road Fork of Stinking Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	29	29
Slate	21	50
Lime and sand	50	100
Coal	2	102
Slate and lime	48	150
Sand	25	175
Slate and lime	50	200
Coal	6	206
Slate and sand	69	275
Slate	25	300
Sand—gas show at 307	50	350
Slate and lime	50	400
Black slate	55	455
Broken slate	20	475
White sand	115	590
Slate and sand	40	630
Sand (base of Pottsville)	390	1020
MISSISSIPPIAN SYSTEM.		
Black lime	20	1040
Sand	10	1050
Black lime	25	1075
Sand	225	1300
Slate and shells	60	1360
Sand and lime	10	1370
Red rock	15	1385
Lime and shells	35	1420
Sand	5	1425
Red rock	50	1475
Shells	35	1510
Slate and sand	50	1560
Sand	35	1595
Black lime	15	1610

LOG No. 396. J. G. BAKER FARM.
Stinking Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	12	12
Coal	4	16
Lime (?)	150	166
Slate	200	366
White sand	74	440
Slate	260	700
Sand (base of Pottsville)	400	1100

MISSISSIPPIAN SYSTEM.		
Shell	60	1160
"Broken"	40	1200
Lime	125	1325
Shell	40	1365
Sand—oil show at 1385	75	1440
Slate	60	1500
Red rock	40	1540
Red rock and shale	160	1700
Black lime	50	1750
Slate	47	1797

LOG No. 397. E. HAMMOND FARM.
Stinking Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	20	20
Slate	92	112
Lime (?)	5	117
Sand	11	128
White sand	22	150
Slate	140	290
Sand	10	300
Slate and shale	197	497
Sand—oil show at 572	75	572
Slate	153	725
Sand	48	773
Black slate	10	783
Sand—oil show at 826	67	850
(All Pottsville).		

LOG No. 398. ANTHONY MILLS FARM.
Goose Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	6	6
Slate	1	7
Gravel	9	16
Slate	74	90
Coal	7	97
Fire-clay	1	98
Slate	55	153
Sand	20	173
Shale	10	183
Slate	26	209
Sand	15	224
Slate	52	276
Sand	7	283
Slate	92	375
Sand	14	389
(All Pottsville).		

LOG No. 399.

ANDERSON FARM—No. 2.
Big Richland Creek near R. R. Crossing.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	32	32
Shale and clay	28	60
Shale	28	88
Sand	12	100
Shale	50	150
Sand	43	193
Shale	14	207
Sand	15	222
Slate	26	248
Sand—oil show	8	256
(All Pottsville).		

LOG No. 400.

ANDERSON FARM—No. 3.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	22	22
Sand	15	37
Slate	55	92
Sand	51	143
Slate	17	160
Sand	20	180
Shale	33	213
Sand	15	228
Slate	25	253
Sand—gas	10	263
Slate	12	275
Sand	10	285
Slate	30	315
Sand	40	355
Slate	10	365
Brown shale	15	380
Slate	26	406
Sand	22	428
Slate	16	444
Sand	62	508
Slate	9	517
Sand	15	532
(All Pottsville).		

LOG No. 401.

DECATUR JACKSON FARM.

Big Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	10	10
Sand	23	33
Shale	167	200
Sand—gas	10	210
Shale	15	225
Sand	20	245
Shale	55	300
Sand	22	322
Shale	38	360
Sand (Jones)—salt water at 440	323	683
Coal	2	685
Sand	20	705
(All Pottsville).		

LOG No. 402.

ANDERSON FARM—No. 4.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Drift	55	55
Shale	35	90
Sand	15	105
Shale	10	115
Sand	20	135
Shale	12	147
Sand	18	165
Slate and shells	60	225
Sand	9	234
Slate	28	262
Sand	5	267
Shale	3	270
Sand	10	280
Slate	8	288
Sand	7	295
Slate	120	415
Sand—oil at 421	40	455
Slate	17	472
Sand—oil show at 497 and 514	49	521

LOG No. 403.

ANDERSON FARM—No. 5.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	19	19
Sand	11	30
Slate and shells	40	70
Slate	25	95
Sand	20	115
Slate and shells	80	195
Slate and sand	45	240
Slate	15	255
Sand	19	274
Slate	2	276
Sand	14	290
Slate	10	300
Slate and shells	45	345
Slate	37	382
Sand	8	390
Shale	27	417
Sand	1	418
Sand—oil show at 462	49	467
Slate	8	475
Sand	19	494
Slate	20	514
Sand—oil at 521	26	540

(The wells on the Anderson farm are all in Pottsville).

LOG No. 404.

LUCY MILLER FARM—No. 1.
Near Bailey Switch.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Drift	10	10
Sand and shale	30	40
Shale	13	53
Sand	2	55
Shale	45	100
Sand	25	125
Shale	196	321
Sand	15	336
Shale	49	385
Lime	10	395
Sand	47	442
Shale	12	454
Sand	124	578
Shale	15	593

Lime	4	597
Shale	12	609
Sand	56	665
Coal	5	670
Sand	92	762
Shale	47	809
Sand	71	880
Shale	21	901
Slate	19	920

(Probably all Pottsville).

LOG No. 405.

LUCY MILLER FARM—No. 3.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand and gravel	13	13
Slate	9	22
Coal	2	24
Slate and shells	101	125
Sand—oil show	22	147
Slate and shells	73	220
Slate	2	222
Sand—oil	10	232
Slate	32	264
Sand	17	281
Slate	48	329
Sand	16	345
Slate	5	350

LOG No. 406.

LUCY MILLER FARM—No. 4.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Drift	19	19
"Hard pan"	4	23
Slate and shells	87	110
Sand—oil show	80	190
Slate	97	287
Sand—oil show	5	292
Shale	48	340
Sand	10	350
Shale	15	365
Slate	25	390
Sand—oil at 467. Gas at 392	82	472

(Wells on the Lucy Miller farm all in Pottsville).

LOG No. 407. W. M. GILBERT FARM.

Big Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	60	60
Shale	120	180
Coal	6	186
Sand	18	204
Shale	66	270
Sand—salt water	25	295
Shale	133	428
Sand (Jones)—oil at 445	67	495

LOG No. 408.

DECATUR JACKSON FARM.

Big Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	10	10
Shale and sand	22	32
Slate and shale	173	205
Sand	11	216
Slate	14	230
Sand	10	240
Shale and shells	60	300
Slate	60	360
Sand } (Jones)	125	485
Slate } (Jones)	6	491
Sand—salt water } (Jones)	54	545
Slate	25	570
Sand	30	600

LOG No. 409.

JOHN J. DISNEY FARM.

Big Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	15	15
Slate	35	50
Sand	5	55
Slate	45	100
Shale	140	240
Sand (Wages)—oil show	20	260
Shale	5	265
Sand	10	275
Shale	85	360
Sand (Jones)—oil, gas and salt water	200	560

LOG No. 410. JOHN J. DISNEY FARM.
Big Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	15	15
Slate	40	55
Sand	10	65
Sand and shale (Wages)	260	325
Shale	70	395
Sand (Jones)	235	630

LOG No. 411. J. W. DISNEY FARM.
Big Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	30	30
Shale	200	230
Sand—water	12	242
Shale	25	267
Sand—Gas and oil	30	297
Shale	50	347
Sand	20	367
Shale	53	420
Sand	35	455
Shale	30	485
Sand	130	615
Shale	30	645
Sand	10	655

LOG No. 412. MOSS FARM.
Parrot Branch of Big Richland.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	18	18
Sand	15	33
Shale	87	120
Sand	55	175
Shale and shells	61	236
Sand	22	258
Shale	22	280
Sand	10	290
Shale—gas	5	295
Sand—oil	7	302
Shale—gas at 380	123	425
Sand—oil show at 470 and 530	114	539

Salt water at 535.
(The records on Big Richland are all in Pottsville).

LOG No. 413.

DOZIER FARM.

Fighting Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	16	16
Shale	25	41
Coal	3	44
Black shale	123	167
Lime (?)	23	190
Sand (Wages)	35	225
Lime (?)	15	240
Slate	120	360
Sand (Jones)	100	460
Slate	15	475
Sand (Epperson)	250	725
Coal	2	727
Sand (Salt)	173	900

LOG No. 414.

THOMAS POINDEXTER FARM.

Fighting Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil and gravel	30	30
Blue shale	20	50
Coal	3	53
Shale	7	60
White sand	40	100
Black slate	20	120
Slate and shells	72	192
Gray sand	12	204
Shale	25	229
White sand	10	239
Slate and shells	30	269
Sand	94	363
Slate and shells	70	433
White sand	12	445
Black slate	10	455
Coal	4	459
Shale	16	475
Sand	39	514

LOG No. 415. JAMES BRINDSTAFF FARM.

Fighting Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Gray sand	45	55
Blue slate	6	61
White sand	12	73
Slate and shell	17	90
Blue shale	20	110
Slate and shell	82	192
Black sand	10	202
Slate and shells	16	218
White sand—oil show	57	275
Slate, shale and shells	60	335
Sand (Jones)—oil at 448 and 471	166	501

LOG No. 416. JAMES BRINDSTAFF FARM.

Fighting Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Sand	55	65
Brown shale	100	165
White sand	8	173
Brown shale	22	195
Slate and shells	23	218
White sand	57	275
Slate, shale and shells	60	335
Sand (Jones)—oil at 448 and 471	166	501

LOG No. 417. JAMES BRINDSTAFF FARM.

Fighting Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	10	10
Sand	55	65
Brown shale	100	165
White sand	8	173
Brown shale	22	195
White sand	86	281
Brown shale	49	330
White sand	12	342
White slate	20	362
White sand	10	372
Brown shale	20	392
White sand (Jones)	88	480

LOG No. 418. MOLLIE MANISS FARM.

Fighting Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	10	10
Shale	15	25
Coal	1	26
Shale	34	60
Sand	30	90
Slate	13	103
Coal	7	110
Shale	80	190
Sand	55	245
Shale	4	249
Sand	106	355
Shale—oil	35	390

LOG No. 419. JAMES GOODIN FARM.

Fighting Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Quicksand	15	15
Lime (?)	45	60
Slate	35	95
B ack slate	50	145
Lime (?)	25	170
White slate	25	195
Black slate	20	215
Sand	62	277
White shale	38	315
Black slate	35	350
Sand	60	410
Slate	6	416
Sand	16	432
Slate—salt water	6	438

LOG No. 420. JAMES GOODIN FARM.

Fighting Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	15	15
Slate	8	23
Sand	19	42
Slate	30	72
Sand	18	90
Dark shale	65	155

Lime (?)	15	170
Brown shale	20	190
Lime (?)	10	200
Black shale	7	207
Sand	61	268
Slate	80	348
Sand	40	388
Slate	42	430
Sand	54	484

LOG No. 421.

MARY BARTELLOW FARM.

Fighting Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	18	18
Shale	180	198
Lime ?)	25	223
Sand	90	313
Shale	105	418
Sand (Jones)—oil	30	448

LOG No. 422.

H. P. MARTIN FARM.

Fighting Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	20	20
Sand	30	50
Shale	60	110
Sand	20	130
Slate	70	200
Sand	90	290
Slate	40	330
Sand—gas	80	410
Slate	15	425
Sand—salt water	398	823

LOG No. 423.

H. P. MARTIN FARM.

Fighting Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	35	35
Lime (?)	5	40
Shale	200	240
Sand	15	255
Shale	50	305

Sand	40	345
Shale	60	405
Sand	100	505
Shale	40	545
Sand	132	677

These well records on Fighting Creek are all of wells in Pottsville.

LOG No. 424.

SI JONES FARM—No. 1.
Little Richland Creek.
Jones "Gusher."

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	8	8
Slate	30	38
Sand—Black oil show	70	108
Slate	100	208
Sand	20	228
Slate	70	298
Sand	8	306
Slate	44	350
Sand (Jones)—oil	30	380

LOG. No. 425.

SI JONES FARM—No. 2.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	30	30
Slate	190	220
Sand	10	230
Slate	150	380
Sand (Jones)—Oil	80	460
Slate	40	500
Sand	120	620

LOG. No. 426.

SI JONES FARM—No. 3.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	22	22
Sand	10	32
Slate	342	374
Sand	5	379
Shale	2	381
Sand (Jones)	12	393

LOG No. 427.

SI JONES FARM—No. 4.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	7	7
Sand	10	17
Slate	69	86
Sand	9	95
Sand—Oil show	18	113
Coal	1	114
Shale	121	235
Slate	25	260
Sand (Jones)	207	467
Slate	86	553
Sand	55	608

LOG No. 428.

SI JONES FARM—No. 6.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil and sand	10	10
Shale	30	40
Sand	10	50
Shale	30	80
Sand—Gas	8	88
Black shale	172	260
Sand	10	270
Shale	167	437
Sand—Oil	20	457

LOG No. 429.

SI JONES FARM—No. 7.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	10	10
Sand	8	18
Shale	85	103
Sand	10	113
Shale	270	383
Sand (Jones)	37	420

LOG No. 430.

SI JONES FARM—No. 8.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	10	10
Sand	20	30
Black slate	20	50
Sand—thick oil	10	60
Black slate	100	160
Sand	10	170
Black slate	80	250
Sand	10	260
Black slate	180	440
Sand	15	455
Black slate	16	471

LOG No. 431.

SI JONES FARM—No. 9.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	18	18
Shale	430	448
Sand and shale	21	469
Shale	13	482

LOG No. 432.

SI JONES FARM—No. 10.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	4	4
Sand	26	30
Shale	50	80
Sand	12	92
Shale	73	165
Sand	20	185
Slate	40	225
Hard shale	75	300
Slate	190	490
Sand (Jones?)—oil show	10	500
Slate	51	551

LOG No. 433.

SI JONES FARM—No. 11.

Little Richard Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay and sand	35	35
Slate	115	150
Sand	20	170
Slate	55	225
Sand	10	235
Slate	11	246
Sand	8	254
Slate	71	325
Sand	8	333
Slate and shale	69	402
Sand (Jones)—Oil and gas	33	435

LOG No. 434.

SI JONES FARM—No. 12.

Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	26	26
Slate	132	158
Sand	17	175
Slate	61	236
Sand	12	248
Slate	90	338
Sand	12	350
Slate and shale	75	425
Sand } Oil	70	495
Slate } (Jones)	5	500
Sand } Oil	15	515
Shale	35	550
Sand	25	575
Shale	50	625
Sand—Oil	24	649
Slate	1	650

LOG No. 435.

JOSEPH A. MILLER FARM
Little Richland Creek

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	15	15
Sand	25	40
White slate	20	60
Brown sale	20	80
Slate	60	140
Sand—Oil show	20	150
Slate	85	245
Sand	15	260
Slate	30	290
Black slate—Gas and salt water	5	295
Sand (Jones)	68	363

LOG No. 436.

JOSEPH A. MILLER FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	20	20
Shale	20	40
Sand	31	71
Shale	183	254
Sand	18	272
Shale	36	308
Sand (Jones)	32	340

LOG No. 437.

JOSEPH A. MILLER FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	26	26
Shale	20	46
Sand	24	70
Shale	200	270
Sand	12	232
Shale	19	301
Sand (Jones)	7	308

LOG No. 438.

JOSEPH A. MILLER FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	25	25
Shale	21	46
Sand	23	69
Shale	204	273
Sand	15	288
Shale	20	308
Sand (Jones)	32	340

LOG No. 439.

JOSEPH A. MILLER FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	27	27
Shale	15	42
Sand	20	62
Shale	180	242
Sand	41	283
Shale	28	311
Sand (Jones)	64	375

LOG No. 440.

JOSEPH A. MILLER FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	28	28
Sand	42	70
Shale	85	155
Sand	30	185
Shale	95	280
Sand	18	298
Shale	32	330
Sand (Jones)	72	402

LOG No. 441.

JOHN WAGES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	9	9
Shale	30	39
Sand—black oil	15	54
Slate	50	104
Sand	20	124
Slate	20	144
Sand—oil	18	162

LOG No. 442.

JOHN WAGES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Shale	145	155
Sand	5	160

LOG No. 443.

JOHN WAGES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	15	15
Slate	120	135
Sand—oil	15	150

LOG No. 444.

JOHN WAGES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	18	18
Sand	5	23
Shale	120	143
Sand	20	163
Shale	97	260
Sand	18	278
Shale	27	305
Sand (Jones)	92	398
Slate	4	402

LOG No. 445. JOHN WAGES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Sand	51	61
Shale	110	171
Sand—oil at 182	65	236
Shale	10	246
Sand	11	257
Shale	63	320
Sand (Jones)—oil at 322 and 336	50	370

LOG No. 446. JOHN WAGES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	9	9
Sand	49	58
Shale	112	170
Sand—oil show	28	198
Shale	110	308
Sand (Jones)—oil show	92	400
Shale		

LOG No. 447. RALPH MAYS FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	35	35
Sand	10	45
Black shale	155	200
Slate and shale	85	285
Sand (Jones)—oil	57	342

LOG No. 448.
MARY F. HUGHES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	18	18
Shale	264	282
Sand	110	392
Black slate	46	438
Sand	162	600
Black slate	3	603
Sand	8	611

Black slate	40	651
White sand	85	736
Black slate	7	743
Blue lime and sand	4	747
White sand	62	809
Black slate	5	814
Blue slate	65	879
Lime and sand	182	1061

LOG No. 449.

MARY F. HUGHES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	10	10
Sand	12	22
Slate	168	190
Sand—oil show	100	515
Slate	60	350
Sand (Jones)	165	515

LOG No. 450.

N. B. JONES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	25	25
Sand	23	48
Shale	100	148
Sand	60	208
Shale	50	258
Sand	25	283
Shale	19	302
Sand (Jones?)—oil	20	322

LOG No. 451.

N. B. JONES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	15	15
Sand	70	85
Shale	90	175
Sand	27	202
Shale	22	224
Sand	59	283
Shale	52	335
Sand (Jones)—oil	69	404

LOG No. 452. N. B. JONES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	35	35
Sand	40	75
Shale	90	165
Sand	65	230
Shale	30	260
Sand	20	280
Shale	30	310
Sand (Jones)	88	398

LOG No. 453. N. B. JONES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	25	25
Sand	40	65
Shale	100	165
Sand	45	210
Shale	80	290
Sand	32	322
Shale	13	335
Sand (Jones?)	37	372

LOG No. 454. J. W. MILLS FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil and shale	170	170
Sand	25	195
Shale	110	305
Sand (Jones?)	45	350

LOG No. 455. J. W. MILLS FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	5	5
Sand	107	112
Shale	50	162
Sand	40	202
Shale	70	272
Sand	22	294
Shale	3	297
Sand	13	310

LOG No. 456.

J. W. MILLS FARM.

Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	28	28
Sand	20	48
Shale	100	168
Sand	45	213
Shale	107	320
Sand (Jones)	19	339

LOG No. 457.

J. W. MILLS FARM.

Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	27	27
Sand	35	62
Shale	60	122
Sand	70	192
Shale	70	262
Sand	30	292
Shale	33	325
Sand (Jones)	121	446

LOG No. 458.

THOMAS GIBSON FARM.

Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	3	3
Sand	15	18
Shale	15	33
Sand	12	45
Shale	50	95
Black shale	45	140
Sand	30	170
Slate	110	280
Sand (Jones)	20	300

LOG No. 459.

THOMAS GIBSON FARM.

Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	3	3
Sand	15	18
Shale	15	33
Sand	12	45
Shale	50	95
Black shale	45	140
Sand	30	170
Slate	110	280
Sand (Jones)—gas and oil	83	363

LOG No. 460.

THOMAS GIBSON FARM.

Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Sand	10	20
Shale	140	160
Sand	30	190
Shale	90	280
Sand (Jones)	68	348

LOG No. 461.

THOMAS GIBSON FARM.

Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	25	25
Shale	30	55
Sand	5	60
Shale	180	240
Black sand	5	245
Shale	35	280
Sand (Jones)—oil	28	308

LOG No. 462.

THOMAS GIBSON FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	60	60
White slate	20	80
White sand	20	100
Black slate	60	160
Sand	40	200
Black slate	85	285
Sand	15	300
Black slate	20	320
Sand (Jones)—oil	86	406

LOG No. 463.

J. K. PAYNE FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Quicksand	10	10
Sand	70	80
Shale	20	100
Sand	30	130
Shale	50	180
Sand	55	235
Shale	45	280
Black sand—salt water	20	300
Shale	18	318
Sand	5	323
Shale	10	333
Sand (Jones?)—oil	4	337

LOG No. 464.

J. K. PAYNE FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Quicksand	18	18
Sand	132	150
Shale	30	180
Sand	75	255
Shale	15	270
Sand	10	280
Shale	5	285
Sand—salt water	12	297
Shale	30	327

Sand—salt water	13	340
Shale	2	342
Sand—salt water	5	347
Shale—oil show	8	355
Sand and shale	15	370
Sand (Jones)—oil	11	381

LOG No. 465.

J. K. PAYNE FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Gravel	5	5
Sand	30	35
Shale	25	60
Sand	25	85
Shale	35	120
Black shale	40	160
Shale	185	345
Sand (Jones)—oil at 372	42	387

LOG No. 466.

THOMAS C. BARNES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	12	12
Shale and shells	183	195
Sand—oil and water	27	222
Shale—oil	58	280
Sand	8	288
Shale	47	335
Sand (Jones)—oil	25	360

LOG No. 467.

THOMAS C. BARNES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	16	16
Shale	29	45
Sand	15	60
Shale	210	270
Sand	20	290
Shale	128	418
Sand (Jones)	53	471

LOG No. 468. THOMAS C. BARNES FARM.

Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Quicksand	18	18
Slate	27	45
Sand	20	65
Slate	50	115
Sand	20	135
Slate	85	220
Sand	8	228
Shale	8	236
Sand	25	261
Shale	117	378
Sand (Jones)—oil and salt water	38	416

LOG No. 469. THOMAS C. BARNES FARM.

Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	20	20
Shale	50	70
Black slate	40	110
White sand	20	130
Shale	50	180
Black sand	10	190
Black slate	140	330
Sand	10	340
Shale	35	375
Sand (Jones)	30	405

LOG No. 470. THOMAS C. BARNES FARM.

Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	20	20
Shale	20	40
Sand	15	55
Slate and shale	124	179
Sand	15	194
Slate	66	260
Sand	12	272
Slate	73	345
Shale	5	350
Slate	48	398
Sand (Jones)—oil	40	438

LOG No. 471.

THOMAS C. BARNES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	16	16
Slate and shale	184	200
Sandy shale	17	217
Slate	83	300
Sand—oil	10	310
Slate	45	355
Sand (Jones)—oil	18	373

LOG No. 472.

THOMAS C. BARNES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
C ay	20	20
Sand	30	50
Slate	131	181
Sand	15	196
Slate	44	240
Sand	20	260
Slate	35	295
Sand	15	310
Slate	74	384
Sand (Jones)	69	453

LOG No. 473.

ELLEN JONES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	56	56
Slate	87	143
Sand	10	153
Shale	242	395
Sand (Jones)—oil	15	41)

LOG No. 474.

ELLEN JONES FARM.
Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	26	26
Slate	54	80
Sand	10	90
Shale	38	128

Slate	32	160
Sand	15	175
Shale	15	190
Sand	15	205
Shale	72	277
Slate	103	380
Sand (Jones)—oil and gas	64	444

LOG No. 475.

ELLEN JONES FARM.

Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	18	18
Shale	87	105
Sand	6	111
Shale	87	198
Sand	28	226
Shale	142	268
Sand (Jones)—oil	36	304

LOG No. 476.

ELLEN JONES FARM.

Little Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	20	20
Sand	15	35
Slate and shale	45	80
Sand	15	95
Slate and shale	310	405
Sand (Jones)—oil show and salt water	39	444
Slate	1	445

LOG No. 477.

HENRY JACKSON FARM.

Long Branch of Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	13	13
Sand	24	37
Sha'e	98	135
Sand	15	150
Shale	95	245
Sand	30	275
Shale	15	290
Sand (Jones?)	101	391

LOG No. 478. HENRY JACKSON FARM.
Long Branch of Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	30	30
Sand	35	65
Shale	70	135
Sand	140	275
Shale	24	299
Sand (Jones?)	99	398

LOG No. 479. GEORGE JONES FARM.
Caleb Branch of Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	10	10
Sand	40	50
Shale	250	300
Sand	50	350
Shale	85	435
Sand (Jones?)—oil	92	527

LOG No. 480. GEORGE JONES FARM.
Caleb Branch of Richland Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Shale	355	355
Sand	30	385
Slate	115	500
Sand (Jones?)—oil show at 525	100	600

LOG No. 481. MESSAMORE FARM.
Trace Branch of Little Richland.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	6	6
Shale	144	150
Sand	15	165
Slate	5	170
Sand	10	180
Slate and shale	75	255
Sand	22	277
Shale	21	298
Sand—gas	11	309
Black slate and sandy shale	21	330
Sand—oil	52	382
Shale	70	452
Sand	24	476

LOG No. 482. JOHN BERRY FARM.
6 Miles N. of Barbourville.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Sand	30	40
Sha e	300	340
Sandy shale	20	360
Shale	40	400
Sand	20	420
Sandy shale	110	530
Sand	160	690
Sandy slate	30	720
Sand	76	796
Slate	4	800
Sand	102	902
Black shale	40	942
White sand (base of Pottsville	30	972
MISSISSIPPIAN SYSTEM.		
Black lime	12	984
Sand	35	1019
Lime and sand	45	1064
Sand	11	1075
Sand and shale	30	1105
Pink shale	10	1115
Sha e and shells	170	1285
Sand	38	1323
Lime and shale	89	1412
White lime	124	1536
Sandy lime—oil show	2	1538
White lime	147	1685
Black lime	71	1756
Red rock	36	1792
DEVONIAN SYSTEM.		
Blue shale	125	1917
Black lime	10	1927
White lime	124	2051
Black lime	43	2094

LOG No. 483. S. H. JONES FARM.
Near Cannon P. O.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Sand—oil show at 107	151	161
Shale	44	205
Sand—oil show	1	206
Sandy shale	84	290
Slate	80	370

Sand	8	378
Shale	112	490
Coal (?)	10	500
Sand—oil show at 609	177	677
Black slate	41	718
Sand—oil show at 748	84	802
Coal	6	808
Lime and shale	28	836
Sand	39	875
Black slate	64	939
Sand	5	944
Lime	11	955
Sand	62	1017
Slate	10	1027
Sand—salt water	90	1117
MISSISSIPPIAN SYSTEM.		
Black slate	5	1122
Slate and shells....	68	1290
Sand	35	1325
Lime and shale	120	1445
White lime	130	1575
"Gas sand"	38	1613
Lime	12	1625

LOG No. 484. M. E. COLE FARM.
Near Cannon P. O.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	15	15
Sand	35	50
Shale	85	135
Coal	5	140
Black shale	10	150
Sand	25	175
Shale	30	205
Sand	153	358
Shale	6	364
Sand	11	375
Black sha'e	20	395
Shale	130	525
Sand	67	592
Black slate	94	686
Lime	24	710
Sand	58	768
Lime and shale	31	799
Lime	56	855

With a few exceptions all the wells on Little Richland are entire'y in the Pottsville.

LARUE COUNTY.

LOG No. 485. WM. BROWN FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	2	2
Lime	218	220
Blue shale	160	380
DEVONIAN SYSTEM.		
Black shale	60	440
Lime	10	450
Sand (?)—salt water	49	499
Pink shale	31	530
Black lime	90	620
White shale	5	625
Lime	5	630
Sand (?)	10	640
Slate	40	680
Lime—salt water	70	750
Black lime	170	920
Base of Devonian indefinite.		

LOG No. 486. McDANIEL FARM.
6½ miles E. of Hodgenville.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Hard lime	50	50
Limy shale	55	105
Soft shale	60	165
DEVONIAN SYSTEM.		
Black shale—gas	55	220
Porous lime—salt water	19	239
Lime	11	250
Shaly lime	20	270
Lime	5	275

LOG No. 487. VIRGIL HOLLAND WELL.
6 miles E. of Hodgenville.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Mud	48	48
Limy shale	2	50
Soft shale	40	90
Lime	15	105
Limy shale	10	115
Lime	35	150
Limy shale	50	200
Lime	275	475
Soft shale	45	520

DEVONIAN SYSTEM.		
Black shale—gas	58	578
Hard lime	6	584
Porous lime—salt water	10	594
Soft shaly lime	41	635
Crystalline lime	20	655
Shaly lime	101	756
White porous lime	7	763
Limy shale	62	825
Base of Devonian indefinite.		

LOG No. 488.

DEVER FARM.
5 miles E. of Hodgenville.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Hard lime	50	50
Shaly lime	115	165
DEVONIAN SYSTEM.		
Black shale (Devonian)—gas	60	225
Lime	20	245
Porous lime—salt water	15	260
Shaly lime	45	305
Brown porous lime	10	315
Limy shale	30	345
White porous lime—gas	5	350
Limy shale	50	400
Base of Devonian indefinite.		

LOG No. 489.

J. B. HOLLAND FARM.
6 miles E. of Hodgenville.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	200	200
Limy shale	20	220
Lime	183	403
Soft shale	37	440
DEVONIAN SYSTEM.		
Black shale (Devonian)—gas	63	503
Porous lime—salt water	67	570
Dark shale	10	580
Reddish shale	15	595
Limy shale	5	600
White porous lime	5	605
Lime	30	635

LAUREL COUNTY.

LOG No. 490.

JACKSON WELL.
1½ miles South of Bernstadt.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	45	45
Blue shale	35	80
Soft lime and shale	40	120
Hard lime	70	190
Water sand (?)	20	210
White lime	20	230
Gray shale	470	700
Black lime	70	770
Slate	45	815
Blue shale	35	850
Black shale	50	900
Fire clay (?)	110	1010
"Oil sand"—light oil show	20	1030
Blue shale	5	1035
"Oil sand"—no show	46	1081
Blue shale	15	1096
"Oil sand"—no show	29	1125
Blue shale	45	1170
Sand (?)	35	1205
Sand and lime	695	1900

(A very poor record, base of Pottsville indefinite).

LAWRENCE COUNTY.

LOG No. 491.

BUSSEYVILLE OIL CO. No. 1.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Gravel	39	39
Lime	11	50
Slate	80	130
Sand	55	185
Slate	225	410
Sand	20	430
Slate	45	475
Sand	160	635
Slate	5	640
Sand	230	870
Slate (base of Pottsville)	10	880

MISSISSIPPIAN SYSTEM.

"Little lime"	20	900
"Big lime"	150	1050
Slate	10	1060
Shale	20	1080
Sand	422	1502
Black shale (Sunbury)	15	1517
"Berea" sand—oil	20	1537

LOG No. 492.

F. R. BUSSEY FARM.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Gravel	30	30
Black slate	50	80
White sand	15	95
White slate	30	125
White sand	20	145
Black lime	40	185
Black slate	15	200
White sand	30	230
Black slate	15	245
White sand	20	265
Coal	4	269
Black slate	186	455
White sand—oil show at 455	30	485
Black slate	70	555
Sand	140	695
Black slate	20	715
Sand	80	795
Black slate	30	825
Sand	10	835
Black slate	30	865
Sand	40	905
Black slate (base of Pottsville)	30	935
MISSISSIPPIAN SYSTEM.		
Red rock	20	955
"Little lime"	15	970
Slate	10	980
"Big lime"	100	1080
Slate and shells	215	1295
White slate	255	1550
Black slate (Sunbury?)	20	1570
Sand	28	1598

LOG No. 493.

BUSSEY WELL—No. 2.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	20	20
White sand	80	100
Brown slate	40	140
White sand	80	220
White slate	130	350
Lime	8	358
Black slate	142	500
White sand	10	510
Black slate	105	615
Sand	15	630
Black slate	10	640
White sand	375	1015
Black slate (base of Pottsville)	2	1017
MISSISSIPPIAN SYSTEM.		
Lime—"Big lime"	130	1147
Sand	60	1207
Slate and shells	268	1475
Black slate	178	1653
Gray sand and slate break	64	1717

LOG No. 494.

LAURA WEBB FARM.

Near Busseyville.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Gravel	30	30
Lime	10	40
Coal	3	43
Black slate	17	60
White sand	20	80
White slate	15	95
White sand	25	120
Black slate	180	300
White sand	25	325
Brown slate	50	375
Lime	75	450
Black slate	30	480
White sand (base of Pottsville)	405	885

MISSISSIPPIAN SYSTEM.		
Lime—"Big lime"	130	1015
White sand	10	1025
Slate and shells	453	1478
Black shale (Sunbury)	21	1499
"Berea sand"	35	1534
Black slate	3	1537
White sand	21	1558
DEVONIAN SYSTEM.		
Black slate	26	1584

LOG No. 495.

O'NEAL FARM—No. 2.
Near Busseyville.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	12	12
White sand	28	40
Black slate	140	180
White sand	20	200
Black slate	400	600
White sand (base of Pottsville)	390	990
MISSISSIPPIAN SYSTEM.		
Blue shale	10	1000
Lime—"Big lime"	150	1150
Sand	15	1165
White shale	10	1175
White sand	25	1200
Slate and shells	300	1500
White slate	133	1633
Brown shale (Sunbury)	20	1653
"Berea" sand	61	1714

LOG No. 496.

JASON BOGGS—No. 1.
Brier Fork of Cains Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Slate—cased at 60 ft.	55	65
Sand	15	80
Slate and broken sand	172	252
Slate	197	449
Sand	3	452
Slate	6	458
Sand	12	470
Slate (base of Pottsville)	25	495

MISSISSIPPIAN SYSTEM.		
"Big lime"	135	630
Dark slate	10	640
"Big Injun" sand and lime	197	837
Slate	8	845
Sand—Gas at 865	125	970
Slate—cased at 976 ft.	20	990
Black shale (Sunbury?)	15	1005
Berea sand	76	1081
Light slate	19	1100
DEVONIAN SYSTEM.		
Brown shale	470	1570
White slate	108	1678
Black lime and slate	10	1688
Sand—Gas at 1690	10	1698

LOG No. 497.

JASON BOGGS—No. 2.
Brier Fork of Cains Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Slate	30	40
Sand	20	63
Slate—gas—cased at 63 ft.	12	75
Sand	15	90
Slate	158	248
Sand	192	440
Slate	4	444
Sand	8	452
Slate (base of Pottsville)	38	490
MISSISSIPPIAN SYSTEM.		
"Big lime"	147	637
Slate	5	642
"Big Injun" sand	23	665
Lime and sand	174	839
Slate	49	888
Sand	64	952
Slate	25	977
Black slate—cased at 980 ft.	28	1005
Berea sand	91	1096
Light slate	19	1115
DEVONIAN SYSTEM.		
Black shale	455	1570
White Slate	112	1682
Sand and lime—Gas at 1684	8	1694

LOG No. 498.

O'BRIEN WELL.
4½ Miles South of Louisa.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	35	35
Black slate	40	75
Coal	2	77
Sand	51	128
Dark slate	127	255
Sand	95	350
Dark slate	85	435
Gas sand (?)	60	495
Dark slate	15	510
Salt sand (?)	250	760
Dark slate	20	780
Sand	100	880
MISSISSIPPIAN SYSTEM.		
Slate	90	970
Red shale	15	985
Lime	20	1005
Sand	50	1055
Black slate	10	1065
"Big lime"	175	1240
Slate and shells	520	1760
Sand	40	1800
Dark slate	20	1820

LOG No. 499.

YOUNG WELL.
Cherokee Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	40	40
Blue shale	40	80
Black slate	150	230
Light slate	20	250
Blue shale	60	310
White sand	80	390
White shale	10	400
White sand (Pottsville)	90	490

MISSISSIPPIAN SYSTEM.		
Slate	50	540
"Big Lime"	110	650
Dark slate	10	660
Light slate	430	1090
Black shale (Sunbury)	40	1130
White sand (Berea?)	80	1210
DEVONIAN SYSTEM.		
Brown shale	510	1720
White shale	100	1820
Sand—Gas show	130	1950

LOG No. 500.

S. A. GARRED WELL.
Near Gallup.

Strata	Thickness	Depth.
PENNSYLVANIAN SYSTEM.		
Drift	40	40
Slate	80	120
Sand	10	130
Slate	5	135
Sand	15	150
Slate	70	220
Coal	2	222
Slate	18	240
Sand	90	330
Shale	5	335
Sand (base of Pottsville)	270	605
MISSISSIPPIAN SYSTEM.		
"Big Lime"	197	802
Slate	18	820
Red rock	2	822
Shells and slate	404	1226
Brown slate (Sunbury)	12	1238
"Berea"—gas show at 1250	50	1288
Slate (part Devonian)	812	2100
Sand and lime—gas show at 2340	770	2870
Red rock	130	3000
Slate	30	3030
Red rock	20	3050
Slate	80	3130

Base of Mississippian and Top of Devonian Systems indefinite —within 812 feet marked part Devonian.

LOG No. 501.

BROAS WELL.
Hood Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	18	18
Sand	4	22
Clay	7	29
Sand	78	117
Shale	52	169
Sand	50	219
Coal	2	221
Slate (base of Pottsville)	12	233
MISSISSIPPIAN SYSTEM.		
Lime	104	337
Sand	27	364
Lime—oil at 320	26	390
Slate and shale	384	774
Sand	100	874
DEVONIAN SYSTEM.		
Black shale	580	1454
Sand	16	1470
Lime	145	1615

LOG No. 502.

F. F. WELL ON BIG BLAINE CREEK.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	12	12
Shale	6	18
Sand	32	50
Black shale	94	144
White sand	24	168
Black shale	3	171
Dark sand	21	192
Gray sand and pebbles	7	199
White sand	21	220
Coarse pebbles—Oil show	12	232
Coarse white sand—Oil show	44	276
Sand and shale	25	301
Coarse white sand and pebbles—Oil and gas	25	326
"Honeycomb" sand	40	366

(All Pottsville.)

LOG No. 503.

GRIFFITHS CREEK WELL.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sands and shales (Pottsville)	790	790
MISSISSIPPIAN SYSTEM.		
Limestone—"Big lime"	152	842
Blue shale—Oil at 1423	481	1423
Gray sand—oil at 1510	87	1510
Missing	20	1530
Hard shale	4	1534
DEVONIAN SYSTEM.		
Black shale and lime shells	644	2178
Lime—(Corniferous?)—Oil	3	2181
Blue shale—Gas at 2211	30	2211
Green shale—Gas at 2350	158	2369
Black and blue shales	38	2407

LOG No. 504.

BERRY WELL.

Hood Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	20	20
Shale	82	102
Sand	49	151
Shale	9	160
Sand	63	223
Shale	4	227
Sand	173	400
Shale (base of Pottsville)	95	495
MISSISSIPPIAN SYSTEM.		
Lime—"Big Lime"	152	647
Shale and sand	195	842
Sand..	48	890
Blue shale	15	905
Black shale	195	1100
Sand and shale	620	1720
Lime and sand—oil and gas	20	1740
White lime	80	1820
Lime and sand	65	1885
Sand—oil	60	1945
Lime	160	2105

LOG No. 505.

J. E. COOPER FARM.

7 miles south of Webbville.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Blue shale	325	325
Lime	15	340
Shale	120	460
White sand	5	465
Shale	120	585
Sand	15	600
MISSISSIPPIAN SYSTEM.		
"Big Lime"	150	750
Light shale	350	1100
Dark shale	50	1150
Sand	130	1280
Dark shale (Devonian?)	455	1735
White shale	105	1840
Sand	80	1920

Base of Mississippian indefinite.

LOG No. 506.

HORSFORD WELL.

1⅛ miles above mouth of Big Blaine.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand and shales (Pottsville)	1025	1025
MISSISSIPPIAN SYSTEM.		
Big lime	140	1165
Waverly	535	1700
Berea shale (Sunbury)	27	1727
Berea grit—gas	60	1787
DEVONIAN SYSTEM.		
Black shale	53	1840

LOG No. 507.

WELL AT MOUTH OF BIG BLAINE.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	20	20
Sand	60	80
Gray shale and red	35	115
Sand	195	310
Brown shale	45	355
Sand	60	415
Black slate	15	430

Sand	110	540
Gray shale	50	590
Black shale	20	610
Sand—Gas and salt water	125	735
Black slate	30	765
Sand—Gas and salt water	95	860
Black shale	10	870
White Conglomerate sand (base of Pottsville)	365	1235
MISSISSIPPIAN SYSTEM.		
Green sand (big lime missing)	5	1240
Slate shells (Waverly)	410	1650
Black slate (Sunbury)	10	1660
Sand (Berea Grit)—Gas	2	1662
Sand and shells	15	1677
Sand and shales	65	1742
Black slate	5	1747
Sand and shells	5	1752
DEVONIAN SYSTEM.		
Black slate	648	2400
Light gray slate	192	2592
Lime	5	2597

LOG No. 508.

J. W. CARTER FARM.

Big Blaine Creek—1 mile above Fallsburg.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Gravel	30	30
Slate	30	60
Sand	15	75
Slate	100	175
Sand	35	210
Slate	20	230
Gas sand	70	300
Slate	30	330
Oil sand	20	350
Slate	80	430
Sand	30	460
Slate	20	480
Sand	60	540
Slate	85	625
Salt sand	50	675
Slate	45	720
Sand	20	740
Slate	40	780

Sand	20	800
Slate	10	810
Sand	50	860
Slate	20	880
Sand	15	895
Slate	15	910
Sand	10	920
MISSISSIPPIAN SYSTEM.		
"Big lime"	55	975
"Big Injun"*	142	1117
"Berea"* —oil	471	1588

*Driller's names.

LOG No. 509.

MILLER FARM.

Lick Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	5	5
Sand	15	20
Slate	30	50
Coal	3	53
Sand	50	103
Slate	422	525
Sand	145	670
Slate	70	740
Sand (Pottsville)	185	925
MISSISSIPPIAN SYSTEM.		
Slate	15	940
"Big Lime"	190	1130
Waverly shale	499	1629
Sand	40	1669
Shelly slate	12	1681

LEE COUNTY.

LOG No. 510.

WELL AT TALLEGA.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Coal measures sand and shale	365	365
MISSISSIPPIAN SYSTEM.		
"Big lime"	175	540
Waverly	515	1055
DEVONIAN SYSTEM.		
Devonian shales	181	1236
Lime—oil show	27	1263

LOG No. 511.

CABLE WELL.

1 mile S. E. of Fincastle.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	4	4
Sand	101	105
MISSISSIPPIAN SYSTEM.		
Slate	83	188
Lime and slate	152	340
Sand	20	360
Lime	81	441
Sand	15	456
Lime	24	480
Slate	115	595
Brown slate	5	600
Shaly slate	365	965
DEVONIAN SYSTEM.		
Brown shale	175	1140
Blue shale	12	1152
Brown shale (Devonian)	7	1159
Blue shale	5	1164
Cap rock	18	1182
Oil sand—oil show at 1182 and 1238	88	1270

LOG No. 512.

SHOEMAKER WELL.

1½ miles S. E. of Fincastle.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	3	3
Sand	121	124
Slate	9	133
Shale	75	208
Sand	92	300
MISSISSIPPIAN SYSTEM.		
Slate	75	375
Lime—"Big lime"	108	483
Slate and shale (Waverly)	499	982
DEVONIAN SYSTEM.		
Brown shale	178	1160
Blue shale (Devonian)	5	1165
Brown shale	8	1173
Cap rock—salt water at 1187	14	1187
Black lime	39	1226
Lime—oil show	9	1235

LOG No. 513. CHARLES HARRIS FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	27	27
Gray shale	190	217
DEVONIAN SYSTEM.		
Black shale (Devonian)	125	342
White shale (Devonian)	6	348
Black shale (Devonian)	8	356
Lime—salt water	75	431

LOG No. 514. EPH ANGEL FARM.
Big Sinking Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	15	15
Lime	140	155
Blue shale	30	185
Lime	20	205
Slate	10	215
Lime	5	220
Slate	85	305
Lime	5	310
Slate	100	410
Lime	4	414
Slate	80	494
Lime	6	500
Slate	100	600
Red rock	10	610
Slate	45	655
DEVONIAN SYSTEM.		
Shale (Devonian)	120	775
Fire clay (Devonian)	15	790
Shale (Devonian)	10	800
Oil sand—oil at 800	11	811

LOG No. 515. DAN FAILEY FARM.
Hell Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	6	6
Slate	23	29
Sand and shells	1	30
Slate	20	50
Sand	85	135
Slate	10	145
Coal	5	150
Slate	75	225

MISSISSIPPIAN SYSTEM.		
Shell and slate	135	360
Black lime	125	485
Slate	40	525
Gray lime	75	600
Slate	368	968
DEVONIAN SYSTEM.		
Black shale (Devonian)	122	1090
Slate (Devonian)	65	1155
Black shale (Devonian)	13	1168
Black lime	2	1170
Gray sand (lime?)	10	1180

LOG No. 516. BRANDENBURG WELL.

½ mile West of Cressmont.

Strata	Thickness		Depth
PENNSYLVANIAN SYSTEM.			
Soil	15		15
Slate	50		65
Sand	60		125
Slate and shale (base of Pottsville)	155		280
MISSISSIPPIAN SYSTEM.			
"Big lime"	180		460
Sand	40		500
Slate	425		925
Brown shale	120		1045
DEVONIAN SYSTEM.			
Fire clay (?)	13		1058
Top of sand		at	1058
Oil show		at	1065
Water		at	1070
"Break"	1105	to	1107
Oil show		at	1130
Slate		at	1143

LOG No. 517.

EUREKA WELL—No. 1.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Shale	60	60
Sand (base of Pottsville)	270	330
MISSISSIPPIAN SYSTEM.		
Lime—"Little lime"	15	345
Shale	15	360
Lime—"Big lime"	140	500
Shale	30	530
Lime	15	545
Shale	440	985

DEVONIAN SYSTEM.		
Black shale	152	1137
"Fire clay" (shale)	13	1150
Lime	22	1172
"Oil sand"—oil	16	1188

LOG No 518.

EUREKA WELL—No. 2.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand (base of Pottsville)	15	15
MISSISSIPPIAN SYSTEM.		
Lime—"Little lime"	15	30
Slate	15	45
Lime—"Big lime"	130	175
Green slate	29	204
Slate	446	650
DEVONIAN SYSTEM.		
Black shale	140	790
"Fire clay" (shale)	15	805
Lime	20	825
"Oil sand"—oil	21	846

LOG No. 519.

EUREKA WELL—No. 9.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	90	90
Slate	180	270
MISSISSIPPIAN SYSTEM.		
Lime	15	285
Slate	15	300
Lime	130	430
Slate	20	450
Lime	10	460
Slate	470	930
DEVONIAN SYSTEM.		
Black shale	135	1065
"Fire clay" (Shale)	15	1080
Lime	58	1138
"Oil sand"	65	1203

LOG No. 520. EUREKA WELL—No. 10.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand and gravel	60	60
MISSISSIPPIAN SYSTEM.		
Black shale	85	145
Lime	135	280
Slate and shells	500	780
DEVONIAN SYSTEM.		
Brown shale	142	922
White shale	10	932
Lime	18	950
"Oil sand"	16	966

LOG No. 521. THOMAS BURKHART FARM.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	15	15
Sand and shale	150	165
MISSISSIPPIAN SYSTEM.		
Sandy lime	35	200
"Big lime"	126	326
Green slate	15	341
White slate	23	364
Blue slate	467	841
DEVONIAN SYSTEM.		
Black shale	139	980
White shale	22	1002
Lime—oil show	91	1093

LOG No. 522. R. J. McLIN FARM—No. 3.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	20	20
Sand	100	120
Slate	10	130
Sand	70	200
MISSISSIPPIAN SYSTEM.		
Slate and shale	143	343
Lime	95	438
Green slate	32	470
Lime	10	480
White slate	460	940
DEVONIAN SYSTEM.		
Brown shale	155	1095
White slate	13	1108
Lime—oil at 1118		1163

LOG No. 523.

R. J. McLIN FARM—No. 4.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	20	20
Sand	100	120
MISSISSIPPIAN SYSTEM.		
Slate	130	250
Lime	95	345
Slate	21	366
Lime	20	386
Blue slate	439	825
DEVONIAN SYSTEM.		
Brown shale	155	980
Green slate	42	1022
Lime	91	1113

LEWIS COUNTY.

LOG No. 524.

ESHAM FARM.
Briery Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Red gravel	8	8
Sandstone	9	17
White slate	38	55
Black slate	47	102
Fire clay	13	115
Black slate	13	128
White slate	2	130
DEVONIAN SYSTEM.		
Black shale	102	232
Fire clay	8	240
Black shale and slate	60	300
White slate; showing of oil, gas, salt water—8 bai ers to a screw and increasing	5	305
Black lime sand; water increased from 306 to 326, no oil or gas below 306	5	310
Light lime sand; no oil, gas or water	35	345
Black lime	10	355
Black slate	3	358

LOG No. 525. HAMILTON FARM—No. 1.
Mouth of Mosby Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Drift	5	5
Sandy clay	49	54
Sandy shale	71	125
DEVONIAN SYSTEM.		
Black slate	195	320
Fire clay	10	330
Black slate	80	410
SILURIAN SYSTEM.		
Blue lime	107	517
Sand	35	552
Fire clay	12	564
Red shale	23	587
Sand	3	590
Red shale	55	645
White slate	35	680
Red shale	5	685
White slate	15	700
ORDOVICIAN SYSTEM.		
Lime	10	710
White slate	35	745
Lime	20	765
Sand	5	770
White slate	230	1000
Mixed lime	771	1771
Pencil cave	12	1783
Hard lime	219	2002

LINCOLN COUNTY.

LOG No. 526. K. DUNAGAN FARM.
Buck Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	7	7
Cherty lime	137	144
DEVONIAN SYSTEM.		
Black slate—gas show	52	196
"Ragland" sand—oil show	8	204
Shale	20	224
Sand (?)—oil show	2	226
Lime	3	229
Sand (?)	3	232
Lime	7	239
Sand (?)	15	254
Lime.		

LOG No. 527.

JOE SCHLACTOR FARM.

2½ miles S. W. of Junction City.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Back shale	42	42
Lime—oil show	22	64
Light shale.		

LOG No. 528.

WELL AT KINGS MOUNTAIN.

Scott Oil & Gas Company, Lessee.

Dr. C. M. Thompson, No. 1., Lessor.

J. McGrath, Driller.

Casing Head Elevation, 1185 ft. Surface Elevation, 1185 ft.

Strata	Thickness	Depth
Conductor	3	3
MISSISSIPPIAN SYSTEM.		
Cliff Rock	10	13
Limestone	50	63
Blue slate	197	260
DEVONIAN SYSTEM.		
Black shale	33	293
Fire clay	3	296
Cap rock	2	315
Limestone (Onondaga-Corniferous)	19	
Total depth		315

Remarks:—Struck gas pocket in Waverly on August 6, 1919, at 9:30 a. m., depth 150 ft., gas gave out 10:30 p. m. same date. Reduced hole from 8 to 6¼ inches at 179 feet. Did not drill all the way through oil sands.

LOGAN COUNTY.

LOG No. 529.

WELL AT DIAMOND SPRINGS.

Strata	Thickness	Depth
Soil	24	24
MISSISSIPPIAN SYSTEM.		
Shale	76	100
Sand	25	125
Slate	35	160
Lime	35	195
Slate	30	225
Sand	20	245
Shale	110	355
Sand	30	385
Shale	11	396

Lime	124	520
Sand—oil show	20	540
Slate	60	600
Sand—oil show	28	628
Hard lime	672	1300

Well starts nearly at top of the Chester and the sandstone at 600—628 is probably the Cypress. Well did not go deep enough to reach the Devonian shale.

LOG No. 530.

WELL AT RUSSELLVILLE.

(Partial record).

Strata	Thickness		Depth
MISSISSIPPIAN SYSTEM.			
"Blue-Lick" water		at	744
DEVONIAN SYSTEM.			
Shale (Devonian?)	910	to	1010
Heavy oil		at	1291
"Marble" (white lime)	1291	to	1411
Dark pebbly rock	1411	to	1854

Base of Devonian indefinite.

MAGOFFIN COUNTY.

LOG No. 531.

TRIPLETT—No. 1.

Pricey Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	14	14
Sand	31	45
Slate	95	140
Sand	75	215
Slate	10	225
Sand	90	315
Coal	3	318
Sand (base of Pottsville)	12	330
MISSISSIPPIAN SYSTEM.		
Lime shells	80	410
Slate	15	425
"Little lime"	20	445
Sand	10	455
Slate	15	470
Slate and lime shells	80	550
"Big lime"—cased at 665	185	735
Waverly shale	335	1070
Brown shale—(Sunbury)	15	1085
"Berea Grit"—oil show	10	1095
Slate break	5	1100
"Berea Grit"—gas show	15	1115
White slate and shells	70	1185

DEVONIAN SYSTEM.		
Black shale	320	1505
White slate	57	1562
"Clinton sand"* (lime)	111	1673

(Oil and gas at 1587. Gas at 1605).
*Driller's convention.

LOG No. 532.

JAMES ONEY FARM.

Left Fork of White Oak Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	7	7
Sand	43	50
Lime	10	60
Sand	20	80
Slate	136	216
Sand	139	355
Slate	5	360
Sand	65	425
Slate	50	475
Sand	90	565
Slate (base of Pottsville)	5	570
MISSISSIPPIAN SYSTEM.		
"Little lime"	12	582
Shells and slate	28	610
"Big lime"	120	730
Light shale	438	1168
Black shale (Sunbury)	18	1186
Berea sand	32	1218
Slate and shells	22	1240
White slate	35	1275
DEVONIAN SYSTEM.		
Brown shale } (Devonian)	163	1438
Lime shell } (Devonian)	2	1440
Brown shale } (Devonian)	152	1592
White slate	29	1621
Lime	149	1770
Slate	15	1785
Lime	20	1805
Slate	16	1821

Top of Silurian indefinite.

LOG No. 533.

W. T. PHILLIPS—No. 1.
White Oak Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay and gravel	20	20
Slate	20	40
Hard shell (sand?)	10	50
Slate	80	130
"Settling sand"	205	335
Slate (base of Pottsville)	37	372
MISSISSIPPIAN SYSTEM.		
"Little lime"	10	382
Slate and shell	33	415
"Big lime"	160	575
Waverly shale—cased at 417	431	1006
Sand—show of oil and gas	14	1020
Black slate (Sunbury)	20	1040
Berea Grit	10	1050
White slate	45	1095
DEVONIAN SYSTEM.		
Black slate	262	1357
White shale	23	1380
"Clinton sand"* (lime)—show of gas in top	230	1610
Slate	10	1620
Red rock	6	1626

*Driller's distinction.

Top of Silurian indefinite.

LOG No. 534.

W. M. KEATON FARM.
Near Netty P. O.
Johnson Fork.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	18	18
White slate	112	130
Lime shells	10	140
Slate	220	360
Lime	60	420
Sand	95	515
Slate	115	630
Sand	10	640
Black lime (?)	15	655
Sand (base of Pottsville)	149	804

MISSISSIPPIAN SYSTEM.		
"Little lime"—cased at 804	6	810
Slate	2	812
"Big lime"	123	935
Waverly shale	367	1302
Black shale (Sunbury)	4	1306
Sand (Berea Grit?)	20	1326
White slate	14	1340
Sand	15	1355
White slate	25	1380
DEVONIAN SYSTEM.		
Brown shale	298	1678
White slate	40	1718
Brown lime—oil show at 1838	120	1838
Gray lime	16	1854
Slate	3	1857
SILURIAN SYSTEM.		
Brown sand (?)*	8	1865
Brown lime	50	1915
White sand (?)*	70	1985
Sand (?)*	2	1987

*Probably lime

LOG No. 535.

A. J. LINDON FARM.
Head of Johnson Fork.
Eastern Gulf Oil Co., Lessee.
Started July 15, 1917—Completed August 31, 1917.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Shelly slate	30	40
Lime shell	35	75
Slate—coal at 175	100	175
Sand	25	200
Slate	100	300
Sand	15	315
Slate	35	350
Sand	5	355
Slate	5	360
Sand	110	470
Slate	105	575
Lime shells	20	595
Sand	75	670
Slate	60	730
Sand (base of Pottsville)	33	763

MISSISSIPPIAN SYSTEM.		
"Little lime"	5	768
Slate	10	778
"Big lime"	114	892
Waverly shale	434	1326
Black shale (Sunbury)	5	1331
Berea Grit	20	1351
White slate	25	1376
DEVONIAN SYSTEM.		
Brown shale	319	1695
White slate	30	1725
Lime (Ragland sand?)	60	1785

LOG No. 536.

Near Hendricks P. O. on Middle Fork of Licking River.

Harris Arnett, Lessor; L. H. Gormley, Lessee.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	40	40
Black slate	260	300
Gray sand	85	385
Black slate	75	460
Shelly slate	25	485
White lime (?)	40	525
White sand (base of Pottsville)	190	715
MISSISSIPPIAN SYSTEM.		
Gray lime—"Big lime"	210	925
Dark slate	245	1170
Shelly sand	20	1190
Gray sand	100	1290
Shelly slate	100	1390
DEVONIAN SYSTEM.		
Black slate	400	1790
Lime	290	2080
Bastard gray sand	50	2130
Slate and red shale	77	2207

LOG No. 745.

F. M. BLANTON—No. 2.

Bed Rock Oil Co. Well, on F. M. Blanton Farm on Big Branch of Ticklick Branch of Mine Fork of Little Paint Creek, in Magoffin County.

Elevation Surface 960 A. T.

Strata			
PENNSYLVANIAN SYSTEM.			
Drift	0	6	feet
Slate	6	27	
Coal	27	28	
Slate	28	39	
Gray sand	39	90	
White sand	90	170	
White sand	170	235	Fresh water and strong show of oil.
Gray shale and slate	235	342	
White sand	342	395	
Shale and gray sand	395	405	
MISSISSIPPIAN SYSTEM.			
White sand	405	410	
Gray sand and lime	410	420	
Green shale	420	430	
Sand and blue shale	430	449	
White lime—Big Lime	449	510	Big Lime—460 ft. of casing.
Gray and blue shale	510	614	
Limy sand	614	775	
Gray sand	775	817	Weir. Gas from top to bottom. 987,000 cu. ft. of gas.
Black shale—Sunbury	817	832	

Time of drilling 8 days. Drilled by E. F. Henry.

LOG No. 746.

F. M. BLANTON—No. 3.

Bed Rock Oil Co., on Big Branch of Ticklick Branch of Mine Fork in Magoffin County.

Elevation Surface 1025 ft.

Strata			
PENNSYLVANIAN SYSTEM.			
Drift	0 to	24	feet
Slate	24	100	
Brown sand	100	140	
White sand	140	200	
White sand	200	300	Fresh water.
Shale and slate	300	424	
Brown sand	424	435	
Brown sand	435	460	

MISSISSIPPIAN SYSTEM.

Gray shale	460	475	
Blue shale and lime	475	505	
Blue shale	505	525	
White lime	525	600	Big Lime casing set at 538.
Green sand and sha'es	600	869	
Light gray sand	869	915	Weir sand gas. Later properly gauged and found to be over 2,000,000.
Black sha'e	915	949	

Driller, E. F. Henry.

LOG No. 747.

Bed Rock Oil Co's. J. C. Cantrill No. 1, on Ticklick Branch of Mine Fork, in Magoffin County.
Elevation Surface 955 A. T.

Strata

PENNSYLVANIAN SYSTEM.

Drift	0 to	15	feet
Sand stone	15	100	
Sand and shales	100	200	
Sandstone	200	310	
Sandstone	310	312	
Blue Clay	312	325	
White sandstone	325	373	

MISSISSIPPIAN SYSTEM.

Blue clay	373	375	
Shelly lime and shales	375	417	
Blue Clay	417	426	
White lime	426	504	Big Lime casing set at 440.
Gray shales	504	712	
Sandy lime	712	740	About 50,000 cu. ft. gas.
Black shale	740	750	
Gray sand	750	788	Weir sand gas from top to bottom. 850,000 cu. ft.
Sandy shales	788	819	

Rock Pressure 285.

LOG No. 748.

Bed Rock Oil Co's. Boyd Conley No. 1, on Ticklick Branch of Mine Fork in Magoffin County.
Elevation Surface 905 ft.

Strata

PENNSYLVANIAN SYSTEM.

Drift and sand	0 to	50	
Sandstone	50	190	
Coarse white sand	190	270	Fresh water at 200.
White sand	270	340	

MISSISSIPPIAN SYSTEM.

Blue clay with sandy breaks	340	365	
White lime	365	485	Big Lime cased at 400.
Brown shales	485	640	
Slate	645	650	
Sandy lime	650	665	Some gas.
Green shale	665	700	
Gray sand	700	731	175,000 cu. ft. gas.
Black shale	731	743	
Gray sand	743	769	555,000 cu. ft. gas.

Rock Pressure 285.

LOG No. 749.

Harris Howard No. 1, Bed Rock Oil Co., Lessee; Meadow Branch of Licking River, just above the forks of the Branch up the Right Fork.

Elevation Surface about 940 ft.

Strata			
PENNSYLVANIAN SYSTEM.			
Drift	0	26	feet
Shale	26	60	
Coal	60	63	
Sand	63	167	
Coal	167	170	
Sand	170	185	
Sand—black oil	185	195	
Sand	195	275	
Bluish shale	275	300	
Sand	300	320	
Shales	320	475	
Sand with gas	475	500	
White sand—show of oil	500	550	
Sand—salt water	550	570	
MISSISSIPPIAN SYSTEM.			
Shale	570	740	
White lime	740	835	Big Lime 8¼ set at 800
Shales	835	1160	
Sand	1160	1250	Weir sand. Salt water at 1170. Rose 900 feet in hole.
Sandy lime	1250	1310	
Black shale—soft	1310	1350	Sunbury shale.
Yellow hard shale	1350	1390	Berea Formation.
DEVONIAN SYSTEM.			
Black shale	1390	1750	
Gray shale	1750	1865	
Gray lime	1865	1955	Corniferous. 100,000 cu. ft. of gas.

MARTIN COUNTY.

LOG No. 537.

JACK CASSIDAY FARM.

Hardin Branch of Coldwater Fork of Rockcastle Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	24	24
Gray sand	88	112
Light slate	12	124
White sand	18	142
Light slate	40	182
Gray sand	3	185
Black slate	5	190
Gray sand	76	266
Black slate	8	274
Gray sand	13	287
Light slate	30	317
Black slate	87	404
Dark sand—gas	15	419
Black slate	56	475
White sand—salt water	93	568
Black slate	5	573
Gray and white sand	69	642
Black slate	7	649
Gray sand	60	709
Black slate	2	711
Gray sand	24	735
Black slate	3	738
White sand	164	902
Black slate	53	955
Gray sand	4	959
Dark slate	33	992
Limy sand	6	998
Light slate	4	1002
White sand (base of Pottsville)	14	1016
MISSISSIPPIAN SYSTEM.		
Light slate	34	1050
Dark lime	8	1058
Red shale	53	1111
Light slate	8	1119
White sand	26	1145
Black slate	30	1190
Dark lime—gas at 1340	200	1390
Sandy slate	12	1402
Red shale	27	1429
Dark slate	445	1874
Black slate (Sunbury?)	18	1892

Gray, limy sand (Berea?)	27	1919
Light slate	20	1939
Dark slate	32	1971
DEVONIAN SYSTEM.		
Brown slate (Devonian)	10	1981
Dark slate (Devonian)	24	2005

LOG No. 538.

J. M. STEPP FARM.
Wolf Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Drift	18	18
Sand	12	30
Coal	2	32
Slate	12	44
Sand	55	99
Light slate	10	109
White sand	40	149
Light slate	5	154
White sand	56	210
Coal	2	212
Light slate	105	317
Sand	8	325
Coal	2	327
White sand	10	337
Light slate	20	357
White sand	12	369
Black slate	20	389
White slate	40	429
White sand	21	450
Light slate	50	500
White sand	24	524
Black slate	25	549
White sand	30	579
Light slate	24	603
Gray sand	24	627
Light slate	25	652
White sand	48	700
Dark slate	40	740
White sand	15	755
Sandy slate	20	775
Gray sand	25	800
Black slate	10	810
White sand	100	910
Coal	3	913
Light slate	6	919

Sand	37	956
Slate	28	984
Sand	139	1123
Black slate (base of Pottsville)	20	1143
MISSISSIPPIAN SYSTEM.		
Red shale	6	1149
Light sand	100	1249
Dark slate	18	1267
Red shale	36	1303
"Big lime"—Oil at 1320—Gas at 1400	217	1520
Blue slate	33	1533

LOG No. 539.

SAM MUNSEY FARM.
Big Branch of Wolf Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	56	56
Light slate	24	80
Gray sand	35	115
Light sate	23	138
Dark sand	37	175
Dark slate	18	193
Coal	2	195
Dark slate	15	210
Coal	4	214
Shelly slate	248	462
Light sand	16	478
Shelly slate	167	645
Gray sand	45	690
Dark slate	8	698
Sand	135	833
Coal	3	836
Dark sand	29	865
Dark slate	28	893
White sand—black oil (Pottsville)	79	972
MISSISSIPPIAN SYSTEM.		
Shelly slate	38	1010
Red shale	15	1025
Black sand	14	1039
Black slate	6	1045
Red shale	10	1055
Black slate	18	1073

Red shale	78	1151
Dark sand—Gas	12	1163
Dark slate	30	1193
Gray sand	36	1229
Black slate	6	1235
Lime—"Big lime"	175	1410
Dark sand	10	1420
Sandy slate	16	1436
Black slate	6	1442
Dark sand	15	1457
Dark slate	78	1535
Black slate	4	1539

LOG No. 540.

WARFIELD WELL.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	32	32
Sand	11	43
Coal	7	50
Sand	97	147
Coal	3	150
White sand	50	200
Shale—Salt water	75	275
Sand	20	295
Shale	214	509
Sand	71	580
Missing	13	593
Sand—Oil show	88	681
Shale	18	699
Sand	51	750
Shale	200	950
Pebbly sand—Oil and gas	50	1000
White and blue shales	200	1200
Coarse pebbly sand	10	1210
MISSISSIPPIAN SYSTEM.		
Shells	90	1300
Sandy lime—Gas	7	1307

(Irregular Record).

LOG. No. 541. YORK AND RATLIFF WELL.
2 miles above Warfield.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil and gravel	55	55
Slate	55	110
Sand	30	140
Slate and sand	75	215
Coal	2	217
Slate	13	230
Coal	6	236
Slate	90	326
Sand	40	366
Slate and shells	284	650
Sand—Salt water	225	875
MISSISSIPPIAN SYSTEM.		
Slate	165	1040
Slate and red rock	60	1100
Green slate and red rock	120	1220
Sand	15	1235
Blue slate and red rock	28	1263
Red rock	10	1273
Black slate	20	1293
Dark shale	20	1313
"Little lime"	8	1321
"Pencil cave"	9	1330
"Big lime"—gas at 1486	169	1499

Gas well

LOG No. 542. THOS. KIRK FARM.
3 miles above Warfield.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	30	30
Sand	55	85
Slate	55	140
Coal	5	145
Slate	105	250
Sand	50	300
MISSISSIPPIAN SYSTEM.		
Slate	260	560
Sand—Salt water	220	780
Slate and shells	120	900
Sand	50	950
Slate and shells	20	970
Red rock	20	990
Green slate	32	1022
Lime	18	1040

Red rock	15	1055
Blue slate	20	1075
Lime shells and red rock	50	1125
Shells and slate	50	1175
Slate	25	1200
"Big lime"	170	1370
Slate	5	1375
Sand	65	1440
Slate	35	1475
Sand	40	1515
White slate	375	1890
DEVONIAN SYSTEM.		
Black shale (Devonian?)	64	1954

McLEAN COUNTY.

LOG No. 543. T. C. MARTIN FARM.

Livermore.

(Partial record).

Strata		Feet
PENNSYLVANIAN SYSTEM.		
White sand—Oil show		at 130
White shale		" 140
Light gray shale		" 275
MISSISSIPPIAN SYSTEM.		
Gray lime		" 300
White sand—oil show		" 309
Gray lime		" 443
Gray shale		" 595
Gray shale		" 700
Dark gray sand		" 800
Gray shale		" 865
Dark gray lime		" 895
Very dark lime		" 1165
Gray sand		" 1540
Dove-colored lime		" 1760
Dark shale		" 1800
Gray lime		" 1906
Gray sand		" 2010
Dark sandy shale—oil show		" 2020
Brown sand		" 2080
Dark shale—Oil show (Devonian)		" 2420
Dove colored lime		" 2500
Dark shale		" 2600
Dark calcareous sand		" 2670
Dark shale		" 2715
Black shale		" 2800
Dark shale		" 3000
Gray lime	3025	to 3241

(Poorly kept record).

MEADE COUNTY.

LOG No. 544.

HARRINGTON FARM.

Doe Run.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	8	8
Lime	232	240
Limy shale	300	540
White shale	90	630
DEVONIAN SYSTEM.		
Black shale—gas	60	690
Lime—Oil show at 940. Salt water at 780 and 878	460	1150
Shaly lime	255	1405
Top of Silurian indefinite.		

MENIFEE COUNTY.

LOG No. 545.

G. W. GAY FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	5	5
Blue clay	10	15
White shale	90	105
Blue shale	50	155
Gray lime	10	165
White shale	3	168
Soft blue shale	70	238
Hard blue shale	94	332
DEVONIAN SYSTEM.		
Black shale } (Devonian)	136	468
White clay } (Devonian)	6	474
Brown shale } (Devonian)	7	481
Lime—"Ragland sand"—Gas	19	500

LOG No. 546. ELIJAH MYNHIER FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	10	10
Blue shale	50	60
Dark lime	10	70
Blue shale	85	155
Light shale	4	159
Dark lime	16	175
Shale	123	298
Gray lime	5	303

DEVONIAN SYSTEM.		
Black shale (Devonian)	137	440
Blue shale (Devonian)	12	452
Lime—"Ragland sand"—Gas	26	478

LOG No. 547.

G. W. POYNTER FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	6	6
Dark sand	144	150
Blue shale	220	370
DEVONIAN SYSTEM.		
Black shale (Devonian)	150	520
Blue shale (Devonian)	8	528
Lime—"Ragland sand"—gas at 530 and 542 to 563	35	563
Blue shale	2	565

LOG No. 548.

G. W. POYNTER FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	7	7
Dark sand	79	86
Shale	327	413
DEVONIAN SYSTEM.		
Black shale (Devonian)	144	557
Blue shale (Devonian)	6	563
Black shale (Devonian)	1	564
Lime—"Ragland sand"—Gas	37	601
Blue shale	3	604

LOG No. 549.

T. E. AMBURGEY FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	23	23
Sand	222	245
Shale	225	470
Gray lime	5	475
Blue shale	10	485
DEVONIAN SYSTEM.		
Black shale (Devonian)	165	650
Blue shale (Devonian)	5	655
Lime—"Ragland sand"—Gas	45	700

LOG No. 550.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	5	5
Dark shale	15	20
Sand	30	50
Dark shale	267	317
Light shale	9	326
DEVONIAN SYSTEM.		
Black shale	40	366
Brown shale (Devonian)	102	468
Blue shale ..	5	473
Lime—"Ragland sand"—Gas	26	499
Blue shale	4	503

LOG No. 551.

W. F. FITZPATRICK FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	6	6
Blue shale	30	36
Sand	8	44
Blue shale	263	307
Gray lime	8	315
DEVONIAN SYSTEM.		
Black shale (Devonian)	143	458
Blue shale .. (Devonian)	8	466
Lime—"Ragland sand"—gas	28	494
Blue shale	19	513

LOG No. 552.

G. W. MILLER FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	9	9
Sand	176	185
Blue shale	236	421
Dark lime	22	443
DEVONIAN SYSTEM.		
Black shale (Devonian)	144	587
Blue shale (Devonian)	8	595
Lime—"Ragland sand"—Gas	26	621
Blue shale	7	628

LOG No. 553.

JOHN FEERAFT FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	7	7
Dark sand	61	68
Blue shale	4	72
Dark sand	21	93
Blue shale	1	94
Dark sand	6	100
Blue shale	45	145
Dark sand	3	148
Blue shale	12	160
Dark sand	10	170
Blue shale	13	183
Dark sand	11	194
Blue shale	318	512
Gray lime	2	514
Blue shale	6	520
Gray lime	2	522
Blue shale	8	530
Black shale	6	536
Blue shale	9	545
DEVONIAN SYSTEM.		
Black shale (Devonian)	98	643
Brown shale (Devonian)	58	701
Blue shale (Devonian)	9	710
Lime—"Ragland sand"—Gas	36	746
Blue shale	5	751
Gray lime	5	756
SILURIAN SYSTEM.		
Blue shale	68	824

LOG No. 554.

JACK BARNETT FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	10	10
Sand	130	140
Blue shale	140	280
Dark lime	5	285
Blue shale	13	298
Dark lime	4	302
Blue shale	145	447
Gray lime	2	449

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Black shale (Devonian)	91	540
Brown shale (Devonian)	43	583
Blue shale (Devonian)	12	595
Brown shale (Devonian)	8	603
Blue shale (Devonian)	5	608
Lime—"Ragland sand"—Gas	12	620
SILURIAN SYSTEM.		
Blue shale	153	773

LOG No. 555.

CATHERINE TABOR FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	9	9
Sand	381	390
Yellow lime	2	392
Sand	98	490
Yellow lime	2	492
Blue shale	25	517
DEVONIAN SYSTEM.		
Black shale (Devonian)	153	670
Blue shale (Devonian)	10	680
Lime—"Ragland sand"—Gas	23	703
SILURIAN SYSTEM.		
Blue shale	7	710

LOG No. 556.

HULDA COLDIRON FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	7	7
Dark sand	13	20
Blue shale	3	23
Dark sand	5	28
Blue shale	5	33
Dark sand	5	38
Blue shale	4	42
Dark sand	9	51
Blue shale	13	64
Dark sand	6	70
Blue shale	25	95
Dark sand	25	120
Blue shale	310	430
Gray lime	2	432
Blue shale	4	436

DEVONIAN SYSTEM.		
Black shale (Devonian)	24	460
Blue shale (Devonian)	6	466
Brown shale (Devonian) Shale gas at 500.	137	603
Blue shale (Devonian)	4	607
Lime—"Ragland sand"—Gas	26	633
SILURIAN SYSTEM.		
Blue shale	2	635
Lime	20	655
Blue shale	2	657
Lime	3	660
Blue shale	1	661
Lime	6	667
Blue shale	2	669
Lime	3	672
Blue shale	4	676

LOG No. 557.

J. M. ADAMS FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	7	7
Sand	47	54
Blue shale	288	342
Gray lime	3	345
DEVONIAN SYSTEM.		
Black shale (Devonian)	160	505
Blue shale (Devonian)	4	509
Lime—"Ragland sand"—Gas and salt water	26	535
SILURIAN SYSTEM.		
Blue shale	10	545
Gray lime	5	550
Light shale	7	557

LOG No. 558.

EWING HEIRS FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gravel	15	15
Blue shale	325	340
DEVONIAN SYSTEM.		
Black shale (Devonian)	230	570
"Ragland sand"	50	620

Strata	Thickness	Depth
SILURIAN SYSTEM.		
Lime (?)	180	800
Red rock	25	825
Lime	150	975
White slate	25	1000
Blue lime	200	1200
Red rock	10	1210
White lime	300	1510
White sand (?)	50	1560
White lime	80	1640
Sand (?)	20	1660
Lime	141	1801

LOG No. 559. AGNES ROTHWELL FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	4	4
Sand	186	190
Dark lime	2	192
Blue shale	206	398
Blue lime	14	412
DEVONIAN SYSTEM.		
Black shale (Devonian)	130	542
Blue shale (Devonian)	2	544
Black shale (Devonian)	11	555
Brown shale (Devonian)	6	561
Blue shale (Devonian)	11	572
Lime—"Ragland sand"—Gas	43	615
SILURIAN SYSTEM.		
Shale	134	749
Gray lime	5	754
Blue shale	5	759
Gray lime	441	1200

LOG No. 560. BELLAMY FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	5	5
Blue shale	113	118
DEVONIAN SYSTEM.		
Black shale (Devonian)	150	268
Blue shale (Devonian)	62	330
Gray lime	15	345
Dark shale	38	383
SILURIAN SYSTEM.		
Lime	317	700

LOG No. 561.

DAVIS HAMILTON FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	8	8
Blue shale	15	23
Black shale	152	175
Light shale	35	210
Gray lime	3	213
Blue shale	2	215
DEVONIAN SYSTEM.		
Black shale	143	358
Blue shale	64	422
Black shale	18	440
SILURIAN SYSTEM.		
Blue shale	46	486
Green shale	14	500
Yellow flint	1	501
Reddish-brown sLale	8	509
Light green shale	3	512
Reddish-brown shale	2	514
Gray lime	11	525
Blue shale	2	527
Gray lime	3	530
Blue shale	18	548
Gray lime	24	572
Pink shale	2	574
Gray lime	3	577
Light shale	8	585
Gray lime	3	588
Blue shale	2	590
Gray lime	4	594
White shale	6	600
Blue shale	14	614
Lime	355	969
Gray slate	5	974
Dark lime	21	995
Blue slate	3	998
Dark lime	7	1005

(Ragland sand was missing.)
(Top of Ordovician not defined.)

LOG No. 562.

R. S. INGRAM FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	10	10
Blue shale	10	20
Sand	30	50
Blue shale	48	98
Sand	12	110
Gray lime(?)	100	210
Blue lime(?) and slate	187	397
DEVONIAN SYSTEM.		
Black shale (Devonian)	173	570
Lime—"Ragland sand"—Oil show and salt water	60	630
SILURIAN SYSTEM.		
Blue shale	140	770
Pink shale	25	795
Blue lime	53	848

LOG No. 563.

J. J. CHAMBERS FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	4	40
Sand	176	180
Blue shale	92	272
Brown lime	2	274
Blue shale	51	325
Sand	17	342
Blue shale	60	402
Sand	13	415
Blue shale	36	451
Blue lime	3	454
Blue shale	8	462
DEVONIAN SYSTEM.		
Black shale (Devonian)	138	600
Blue shale (Devonian)	10	610
Lime—"Ragland sand"	43	653
SILURIAN SYSTEM.		
Blue shale	5	658

LOG No. 564.

J. J. CHAMBERS FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	7	7
Sand	113	120
Shale	334	454
Lime	3	457
DEVONIAN SYSTEM.		
Black shale } (Devonian)	156	613
White shale } (Devonian)	8	621
Lime—"Ragland sand"—Gas show at 636, Oil show at 646	40	661
Lime	34	695
SILURIAN SYSTEM.		
Blue shale	13	708

LOG No. 565.

T. F. PAYNTER FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	7	7
Shale	403	410
DEVONIAN SYSTEM.		
Black shale } (Devonian)	140	550
Light shale } (Devonian)	7	557
Lime—"Ragland sand"—Gas	20	577
Gray shale	13	590

LOG No. 567.

SKIDMORE BROTHERS FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	9	9
Sand	71	80
Blue shale	298	378
DEVONIAN SYSTEM.		
Black shale } (Devonian)	156	534
Blue shale } (Devonian)	6	540
Lime—"Ragland sand"	44	584
SILURIAN SYSTEM.		
Blue shale	6	590

LOG No. 568.

JOHN P. CROCKETT FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	3	3
Sand	5	8
Blue shale	7	15
Sand	3	18
Blue shale	7	25
Sand	10	35
Blue shale	60	95
Sand	11	106
Blue shale	254	360
Gray lime	2	362
Blue shale	53	415
Gray lime	5	420
DEVONIAN SYSTEM.		
Black shale } (Devonian)	159	579
Blue shale } (Devonian)	8	587
Lime—"Ragland sand"	55	642

LOG No. 569.

ALEXANDER FARM.

7 miles from Frenchburg.

Casing Head Elevation 725 feet.

Strata	Depth
MISSISSIPPIAN SYSTEM.	
Hard sandstone	200
Hard limestone	100
Soft shelly sandstone	250
Soft Soapstone	350
DEVONIAN SYSTEM.	
Black and brown shale	175
Fire clay	12
Limestone Cap Rock (Corniferous L. S.)	2
Oil sands (drilled in)	17

LOG No. 570.

JAMES NEAL FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	9	9
Sand	16	25
Blue shale	5	30
Sand	25	55
Blue shale	45	100
Sand	8	108
Blue shale	92	200

Sand	20	220
Blue shale	20	240
Sand	48	288
Blue shale	22	310
Sand	20	330
Blue shale	78	408
Gray lime	12	420
DEVONIAN SYSTEM.		
Black shale (Devonian)	139	559
Blue shale (Devonian)	6	565
Lime—"Ragland sand"	36	601

LOG No. 580.

J. R. LYON FARM.
Head of Blackwater Creek.
(From drillings).

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	17	17
Sand	13	30
Black shale	50	80
Coal	1	81
Shale	19	100
White sand	77	177
Dark gray sand	8	185
Dark shale	12	197
White sand	4	201
Dark s'ate	6	207
White sand	10	217
Cray shale (base of Pottsville)	78	295
MISSISSIPPIAN SYSTEM.		
Gray lime—"Big lime"	47	342
Greenish shale (top of Waverly)	33	375
Light sand	85	460
Gray shale	25	485
Gray sand	280	765
Gray shale	75	840
Gray lime	8	848
Gray shale	32	880
Gray sand	20	900
DEVONIAN SYSTEM.		
Black shale (Devonian)	210	1110
Blue shale (Devonian)	10	1120
Black shale (Devonian)	4	1124
Blue shale (Devonian)	6	1130
Dark shale (Devonian)	4	1134

Gray lime—"Ragland sand"	19	1153
Brownish gray lime	5	1158
Light brown lime	5	1163
Brownish gray lime	5	1168
White lime	8	1176
Brown lime	18	1194

SILURIAN SYSTEM.

Gray lime	11	1205
Very dark argillaceous lime	5	1210
White lime	26	1236
Blue shale (Niagaran)	174	1410
Blue shale—streaks of red lime	15	1425
Variegated lime	36	1461
Gray lime	10	1471

ORDOVICIAN SYSTEM.

Blue argillaceous lime	29	1500
Mixed white and blue limes	135	1635
Gray lime	115	1750
Gray and white limes	150	1900
White, blue and variegated limes	265	2165
Lime and shales mixed	225	2390
Lime	35	2425
Dove-colored lime mixed with green quartzite—top of Tyrone	75	2500
Dark dove-colored lime	100	2600
Light dove-colored lime	140	2740
Dark dove-colored lime	40	2780
Grayish dove-colored lime	40	2820
Dark dove-colored lime	160	2980
Very dark dove-colored lime	85	3065
Grayish dove-colored lime	20	3085
Very dark lime	30	3115
Light dove-colored lime—green shale at base	5	3120
White sandy limestone—gas show—top of Calciferous	11	3131

As stated on page 178 the distinction "Devonian" as used in these records opposite the Black Shale does not necessarily mean that all of the Black Shale is Devonian or that all of the Devonian is Black Shale.

In many of the records the upper part of what the driller includes in the name "Black Shale" may belong in the Mississippian while some of the light shales below the Black Shale are Devonian, as is also the "Ragland sand," the latter a limestone.

MORGAN COUNTY.

LOG No. 582.

CARTER WELL No. 1.
Cannel City.
(Partial record).

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	14	14
To top of "Big Lime"	806	820
MISSISSIPPIAN SYSTEM.		
Big Lime—Waverly—oil show at 970	460	1280
Brown shale (Sunbury)	10	1290
Berea	30	1320
Slate	20	1340
DEVONIAN SYSTEM.		
Black shale	270	1610
Shale	31	1641
Lime—oil at 1645	16	1657

LOG No. 583.

TAYLOR DAY WELL No. 1.
Cannel City.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	15	15
Red rock	30	45
Sand	20	65
Black shale	35	100
Bastard lime (?)	80	180
Sand	45	225
Black slate	100	325
White sand	75	400
Slate and shells	40	440
"Settling" sand	80	520
Black slate (base of Pottsville)	20	540
MISSISSIPPIAN SYSTEM.		
Dark lime	30	570
Pencil cave	10	580
"Big lime"	125	705
White shale	50	755
Waverly shale	435	1190
Brown shale (Sunbury)	35	1225
White shale	35	1260
DEVONIAN SYSTEM.		
Brown shale	286	1546
White shale	30	1576
SILURIAN SYSTEM.		
Lime—oil show at 1588	175	1751

LOG No. 584.

TAYLOR DAY WELL No. 2.
Cannel City.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	10	10
Slate	131	141
Coal	4	145
Slate	50	195
Coal	2	197
Slate	163	360
Sand	258	618
Slate	35	653
Sand	90	743
Slate (base of Pottsville)	6	749
MISSISSIPPIAN SYSTEM.		
"Little lime"	14	763
Pencil cave	5	768
"Big lime"	192	960
Lime (?) shells	50	1010
Sand	20	1030
Shale	350	1380
"Berea"	30	1410
Lime shells	90	1500
DEVONIAN SYSTEM.		
Black shale	230	1730
White shale	25	1755
Lime—heavy gas at 1758—oil at 1768	20	1775

LOG No. 585.

TERRELL WELL No. 1.
Cannel City.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	9	9
Slate and shells	131	140
Slate	30	170
Sand	254	424
Slate	8	432
Sand	78	510
Slate	10	520
Shells	15	535
Sand	85	620
Slate (base of Pottsville)	10	630

MISSISSIPPIAN SYSTEM.		
Lime	15	645
Slate	23	668
"Big lime"	132	800
Sand—oil show at 870	75	875
Waverly shale—oil show at 930	405	1280
Brown shale (Sunbury)	10	1290
Berea	40	1330
DEVONIAN SYSTEM.		
Brown shale	278	1608
White shale	30	1638
Lime—oil	10	1648

LOG No. 586.

KENTUCKY BLOCK CANNEL COAL CO. No. 1.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	19	19
Sand and slate	17	36
Coal	2	38
Sand	4	42
Shale	9	51
Sand	21	72
Sand and slate	101	173
Sand	27	200
Sandy black shale	10	210
Pebble sand	20	230
Black slate	16	246
White sand—oil show at 285	120	366
Sand and shale	6	372
White sand	74	446
Sand and slate	11	457
MISSISSIPPIAN SYSTEM.		
Lime, sand and black slate—oil show at 470	43	500
White sand	78	578
Lime	34	612
Lime and dark slate	34	646
Lime	47	693
Green shale	122	815
Blue shale	84	899
Gray shale	329	1228
Black shale (Sunbury?)	24	1252
Berea	18	1270
Blue shale	36	1306
DEVONIAN SYSTEM.		
Black shale	268	1574
Gray shale	34	1608
Lime—(Ragland sand)—oil	1	1609

LOG No. 587.

KENTUCKY BLOCK CANNEL COAL CO. No. 2.
Cannel City.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand and gravel	12	12
Slate and shells	18	30
Slate	170	200
Sand	260	460
Slate and lime (?)	40	500
"Settling" sand	80	580
Slate (base of Pottsville)	64	644
MISSISSIPPIAN SYSTEM.		
"Big lime"	130	774
Waverly shale	456	1230
Brown shale (Sunbury)	15	1245
Berea	20	1265
Slate	45	1310
DEVONIAN SYSTEM.		
Black shale (Devonian)	269	1579
White slate	32	1611
Lime—oil and gas show at 1616—salt water	20	1631

LOG No. 588.

KENTUCKY BLOCK CANNEL COAL CO. No. 3.
Cannel City.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	17	17
Red rock	50	67
Coal	2	69
Black slate	150	219
Sand	200	419
Slate	20	439
"Settling" sand	100	539
Slate	15	554
Sand	81	635
Slate (base of Pottsville)	15	650
MISSISSIPPIAN SYSTEM.		
"Big lime"	170	820
Waverly shale	440	1260
Brown shale (Sunbury)	10	1270
Berea	40	1310
DEVONIAN SYSTEM.		
Brown shale (Devonian)	279	1589
White slate	30	1619
Lime—strong gas at 1622, oil at 1624	13	1632

LOG No. 589.

SUSAN LYKINS FARM.
Brushy Fork.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	12	12
Shale	6	18
Sand	17	35
Shale—thin coal at 43	102	137
Sand	8	145
Shale	28	173
Sand	152	325
Shale	3	328
Sand	94	422
White pebble-rock	5	427
Sand	6	433
Shale	4	437
Sand	5	442
Sandy shale	4	446
Sand	84	530
White pebble-rock	6	536
Sand (base of Pottsville)	25	561
MISSISSIPPIAN SYSTEM.		
"Little lime"	4	565
Shale	5	570
"Big lime"	105	675
"Waverly"	525	1200
Black shale (Sunbury)	7	1207
Sandy lime	35	1242
Blue shale	43	1285
DEVONIAN SYSTEM.		
Black shale (Devonian)	285	1570
Light shale	41	1611
Lime—oil at 1615. Gas at 1645	49	1660

LOG No. 590.

JESS MORRIS FARM.
Caney Creek.
(From drillings).

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	15	15
Shale	10	25
Sand—gas at 75, 125 and 200	235	260
Pebble rock	5	265
Sand	40	305
Pebble rock	13	318
Dark shale and sand	12	330

Dark shale	10	340
Shaly sand	5	345
Sand	35	380
Pebble rock	30	410
Coal	1	411
Dark shale (base of Pottsville)	42	453
MISSISSIPPIAN SYSTEM.		
Lime	15	468
Limy shale	5	473
Lime—"Big lime"	52	525
Sand and shale—oil show at 625	235	760
Limy shale	5	765
Red sand	1	766
Dark blue, sandy shale—gas at 850, 865 and 920	154	920
Fine sand	5	925
Shale	5	930
Sand—salt water	10	940
Dark shale	33	973
Sand	2	975
Dark shale	37	1012
Shale and sand	16	1028
Black shale (Sunbury)	7	1035
Sand (Berea)—oil at 1052	24	1059
DEVONIAN SYSTEM.		
Dark shale and sand	28	1087
Black shale, gas and oil at 1145	283	1370
Soft blue shale	30	1400
Lime—oil and gas at 1408. Salt water at 1416	50	1450
Lime	65	1515
Sandy lime—oil and gas at 1525	15	1530
Lime	87	1617
Sand	10	1627
Dark, sandy lime	25	1652
Red shale	133	1785
Blue shale	79	1864
Lime	5	1869
Blue shale	22	1891
Gray lime	9	1900
Red shale	6	1906
Blue shale and lime	12	1918
Red shale	4	1922
Dark blue shale	20	1942
Dark lime	25	1967
Sand	7	1974
Sandy and limy shales	47	2021

Base of Devonian indefinite.

Top of Ordovician indefinite.

LOG No. 591.

JAMES STINSON FARM.
Caney Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	19	19
Shale	51	70
Sand—gas at 171	250	320
White pebble rock	13	333
Dark shale and sand	37	370
Sand	62	432
White pebble rock	46	478
Shale (base of Pottsville)	27	505
MISSISSIPPIAN SYSTEM.		
"Little lime"	8	513
Shale	6	519
"Big lime"	116	635
"Waverly"—oil show at 710 and 980	457	1092
Black shale (Sunbury)	8	1100
Sandy lime and shale	55	1155
DEVONIAN SYSTEM.		
Black shale	235	1390
Very dark lime—gas at 1405	25	1415
Blue shale	63	1478
Lime—gas at 1493	47	1525
Sandy lime	63	1588
Blue lime—gas at 1592. Oil at 1598	21	1609

LOG No. 592.

WHITTAKER WELL.
Frisby Branch of Caney Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	40	40
Slate	100	140
Cannel Coal	6	146
Slate	69	215
Sand	70	285
Slate	100	385
Sand	205	590
Slate	5	595
Sand	35	630
Slate	60	690
Sand	70	760
Slate (base of Pottsville)	10	770

MISSISSIPPIAN SYSTEM.		
"Little lime"	6	776
"Big lime"—cased at 782	144	920
Waverly shale	470	1390
Black shale (Sunbury)	10	1400
Berea grit	30	1430
White slate	30	1460
DEVONIAN SYSTEM.		
Brown shale	302	1762
White shale	30	1792
Lime—oil and gas at 1795	25	1817

LOG No. 593.

CHARLIE COFFEY FARM.

White Oak Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	11	11
Slate—oil show at 110	99	110
Gray sand	75	185
Blue slate	30	215
Coal	4	219
Blue slate	81	300
Gray sand	160	460
Blue slate	22	482
Blue lime	13	495
Blue slate	5	500
White sand (base of Pottsville)	120	620
MISSISSIPPIAN SYSTEM.		
Gray lime—"Little lime"	12	632
Blue slate	6	638
White lime } "Big lime"	30	668
Bastard lime } Oil show at 695	90	758
Blue slate (Waverly)	457	1215
Black slate (Sunbury)	24	1239
Lime (place of Berea)	40	1279
DEVONIAN SYSTEM.		
Black slate	273	1552
Black lime	20	1572
Blue slate	34	1606
Gray lime—oil show at 1610	200	1806
Sand	11	1817
Lime.		

LOG No. 594. SAM REED FARM.
Right Fork of White Oak Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	4	4
Sand and clay	10	14
Sand	11	25
Shale	75	100
Lime	30	130
Sand	90	220
Black shale	10	230
Sand	90	320
Blue shale	35	355
Bastard lime	15	370
White sand	70	440
Black sand and shale	5	445
MISSISSIPPIAN SYSTEM.		
Black lime	50	495
White lime	135	630
Black slate	35	665
Sand	25	690
Blue slate	260	950
Black slate and lime	115	1065
Lime shells	5	1070
Black shale (Sunbury)	10	1080
Sand	25	1105
Lime	30	1135
White slate	15	1150
DEVONIAN SYSTEM.		
Brown shale	267	1417
Blue shale	3	1420
Flint and shale	35	1455
Brown lime and shale—gas	20	1475
Brown lime	80	1555

LOG No. 595. W. H. VANCE FARM.
Right Fork of White Oak Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Black slate	10	20
Sand	170	190
Sand and slate breaks	26	216
Slate	2	218
Sand—gas show at 248	102	320
Blue slate	32	352
Sand	114	466

MISSISSIPPIAN SYSTEM.		
Blue slate	3	469
Sand	5	474
Blue slate	4	478
Sand and lime	8	486
"Big lime"	19	505
White slate	3	508
Lime (?)	77	585
Waverly shale	265	850
Black lime (?)	40	890
Waverly shale	133	1023
Brown slate (Sunbury)	12	1035
Sand—oi. and gas show	24	1059
Slate	23	1082
Sand	23	1105
DEVONIAN SYSTEM.		
Black shale	301	1406
Light shale	35	1441
Lime—gas show	13	1454

LOG No. 596.

"RAINBOW" WELL.
West Liberty.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	18	18
Gray sand	68	86
Coal	2	88
Fire clay (?)	10	98
White sand	230	328
Black slate (base of Pottsville)	40	368
MISSISSIPPIAN SYSTEM.		
Blue lime—"Little lime"	6	374
White slate	40	414
Lime—"Big lime"	60	474
Black slate	14	488
Waverly	513	1001
Black shale (Sunbury)	16	1017
Berea—gas show	17	1034
White shale	36	1070
White sand	9	1079
DEVONIAN SYSTEM.		
Black shale	259	1338
Blue and white shales	50	1388
Lime	185	1573

LOG No. 597.

BURNS WELL.
West Liberty.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	18	18
Sand	68	86
Coal	2	88
Shale	10	98
White sand	230	328
Black slate (base of Pottsville)	40	368
MISSISSIPPIAN SYSTEM.		
Blue lime	6	374
White slate	40	414
"Big lime"	60	474
Black slate	14	488
Gray sand	532	1020
Black slate (Sunbury)	25	1045
White shale	50	1095
White sand (Berea?)	10	1105
DEVONIAN SYSTEM.		
Black shale	260	1365
Blue shale	43	1408
Sandy lime—oil show	30	1438
SILURIAN SYSTEM.		
Sand and slate	15	1453
Black slate	9	1462
Sandy lime—oil	40	1502
Hard lime	6	1508

LOG No. 598

REED No. 1.
Neils Valley.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Coal Measures sands and shales	405	405
MISSISSIPPIAN SYSTEM.		
"Big lime"	110	515
Slate	40	555
Waverly	517	1072
DEVONIAN SYSTEM.		
Black shale	285	1357
Slate	31	1388
Lime—gas and oil show at 1447	89	1477
SILURIAN SYSTEM.		
Slate	17	1494
Lime—salt water at 1540	140	1634
Red rock.		

LOG No. 599. MAY WELL No. 1.

Neils Valley.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Coal Measures sand and shales	415	415
MISSISSIPPIAN SYSTEM.		
"Big lime"	125	540
Slate	33	573
Waverly	592	1165
DEVONIAN SYSTEM.		
Black shale	259	1424
Slate	17	1441
Lime—gas and oil show at 1477, oil show at 1521, gas show at 1542	201	1642
Slate	30	1672
(Top of Silurian in 201 feet of lime.)		

LOG No. 600. MAY WELL No. 2.

Neils Valley.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Coal Measures sand and shale	355	355
MISSISSIPPIAN SYSTEM.		
"Big lime"	112	467
Slate	35	502
Waverly	508	1010
DEVONIAN SYSTEM.		
Black shale	304	1314
Slate	30	1344
Lime—gas show at 1351, oil show at 1374, oil and gas show at 1548	251	1595
Slate	35	1630
Red rock	250	1880
Lime	30	1910
Slate	161	2071
Lime—oil show at 2080.		
(Top of Silurian in 251 feet of lime.)		

LOG No. 601. GEO. CASKY WELL.

Elk Fork.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Coal Measures sand and shales	412	412
MISSISSIPPIAN SYSTEM.		
"Big lime"	110	522
Slate	40	562
Waverly	565	1127

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Black shale	310	1437
White slate	29	1466
Lime—gas at 1466, oil show at 1489, salt water at 1500	53	1519

LOG No. 602. J. McLAIN WELL.
Elk Fork.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Coal Measures sand and shales	410	410
MISSISSIPPIAN SYSTEM.		
"Big lime"	105	515
Slate	39	554
Waverly	559	1113
DEVONIAN SYSTEM.		
Black shale	315	1428
White slate	32	1460
Lime—tools lost—abandoned.		

LOG No. 603. H. NEIL WELL.
Neils Valley.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Coal Measures sand and shale	377	377
MISSISSIPPIAN SYSTEM.		
"Big lime"	99	476
Slate	35	511
Waverly	512	1023
DEVONIAN SYSTEM.		
Black shale	310	1333
White slate	30	1363
Lime—oil show at 1375, salt water at 1497	134	1497

LOG No. 604. S. P. NICKELL FARM.
Stacey Fork.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	8	8
Slate	382	390
Sand	165	555
Slate	40	595
Sand	85	680
Slate	25	705
Sand	20	725
Slate (base of Pottsville)	5	730

MISSISSIPPIAN SYSTEM.		
"Little lime"	25	755
"Pencil cave"	5	760
"Big lime"	140	900
Waverly shale	470	1370
Brown shale (Sunbury)	10	1380
Berea Grit	50	1430
DEVONIAN SYSTEM.		
Brown shale	245	1675
White slate	25	1700
White sand (?)—oil and gas show at 1706	15	1715
SILURIAN SYSTEM.		
Lime	200	1915
White sand	6	1921
Brown sand	40	1961
ORDOVICIAN SYSTEM.		
Sand and lime	40	2001
White slate	6	2007
Red rock	100	2107
White slate	40	2147
Red rock	60	2207
White slate	73	2280
Red rock and shells	110	2390
Rotten lime	124	2514

LOG No. 605. JERRY STACEY FARM.

Stacey Fork.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	25	25
Shale and shells	170	195
Sand	280	475
Slate	15	490
Sand	100	590
MISSISSIPPIAN SYSTEM.		
Slate and lime	61	651
"Big lime"	115	766
Waverly shale	474	1240
Brown shale (Sunbury)	9	1249
Berea	31	1280
DEVONIAN SYSTEM.		
Brown shale	258	1538
White slate	25	1563
Sand	6	1569
Brown lime	6	1575

Gas well.

LOG No. 606. JAMES McCLURE FARM.
Grassy Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	12	12
Slate	28	40
Sand	10	50
Slate	100	150
Sand	178	328
Slate	52	380
Sand	10	390
Slate (base of Pottsville)	21	411
MISSISSIPPIAN SYSTEM.		
"Little lime"—cased at 415	19	430
"Big lime"	80	510
Slate and sand	90	600
Slate	40	640
Sand	115	755
Slate and shell	228	983
Sand	34	1017
Slate	33	1050
Shale	25	1075
DEVONIAN SYSTEM.		
Black shale	247	1322
White slate	25	1347
SILURIAN SYSTEM.		
Lime—gas at 1365	63	1410
Lime—gas at 1475	122	1532
ORDOVICIAN SYSTEM.		
Slate	10	1542
Red rock	108	1650
Slate	40	1690
Red rock	20	1710
Slate	30	1740
Red rock	10	1750
Shell and slate	60	1810
Slate	20	1830
Lime	572	2402

LOG No. 607. FRISBY BRANCH OF CANEY CREEK.
Lessor, W. M. Plake. Lessee, Eastern Gulf Oil Co.
Started April 21, 1917. Completed June 7, 1917.
Total Depth 1817 feet.

Strata	Feet		Feet
PENNSYLVANIAN SYSTEM.			
Drift	0	to	40
Slate	40		140
Cannel Coal	140		146

Slate	146	215
Sand	215	285
Slate	285	385
Salt sand	385	590
Slate	590	595
Sand	595	630
Slate	630	690
Sand	690	760
Slate	760	770
MISSISSIPPIAN SYSTEM.		
Little lime	770	776
Big lime, hard	776	920
Waverly shale	920	1390
Black	1390	1400
Berea Grit	1400	1430
White slate	1430	1460
DEVONIAN SYSTEM.		
Brown shale	1460	1762
White slate	1762	1792
Cannel City oil.		
Sand	1792	1817

First oil pay at 2 ft. 6 inch in sand. Second oil pay at 9 ft. in sand. No water showing. A strong flow of gas was struck at 1795 which was 3 ft. in sand. Oil also at same depth rose 500 ft. in hole. Showing of fresh water at 390 ft. enough to drill well. Well flooded at 500 ft. 6¼ inch casing, 782 ft. 8¼ inch casing, 20 ft. Drillers: Kelly Neal and W. S. Potts.

LOG No. 608.

J. A. OLDFIELD FARM.

Mize P. O.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Slate and shells	90	90
White sand	200	290
Slate (base of Pottsville)	50	340
MISSISSIPPIAN SYSTEM.		
"Little lime"	20	360
"Big lime"	115	475
Waverly shale	565	1040
DEVONIAN SYSTEM.		
Brown shale (Devonian)	185	1225
White slate	15	1240
Brown shale	6	1246

MUHLENBERG COUNTY.

LOG No. 609.

WELL BETWEEN CENTRAL CITY AND KINCHELOE FERRY.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	16	16
Shale	38	54
Dark slate	5	59
Coal	5	64
Sand	22½	86½
Coal	5½	92
Sandstone	3	95
Coal	6	101
Sand	10½	111½
Coal	3½	115
Sand	84	199
Shale	8	207
Dark slate	10	217
Coal (No. 9)	6	223
Shale	64	287
Sand	42	329
Coal	7	336
Shale	8	344
Dark slate	10	354
Shale	7	361
Sand	11	372
Shale	21	393
Black slate	13	406
Coal	3½	409½
Sandstone	16½	426
Slate	34	460
Shale	10	470
Sand	9	479
Shale	5	484
Slate	10	494
Shale	15	509
Sand	10	519
Saidstone	9	528
Shaly sandstone	10	538
Sand	6	544
Shale	12	556
Shaly sand	16	572
Sand	32	604
Coal	6	610
Slate	15	625
Shale	8	633

Sand	70	703
Slate	5	708
Sand	28	736
Slate	9	745
Black rock	15	760
Sand	39	799
Slate	45	844
Sand	38	882
Lime and sand	158	1040
Dark slate	48	1088
Sand and lime	37	1125
Dark slate	64	1189
Shale	18	1207
Sand and lime	47	1254
Slate	27	1281
Sand and lime	29	1310
Dark slate	8	1318

(Probably all Pottsville.)

NICHOLAS COUNTY.

LOG No. 610. DICK WHALEY FARM.

Near Myers Station.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Clay	10	10
"Trenton" lime*—Gas shows at 40, 89 and 175	200	210
Gray lime	490	700
White gritty lime—"Blue Lick" water at 708	16	716

*"Trenton" is driller's distinction.

OHIO COUNTY.

LOG No. 611.

WELL 1 MILE S. E. OF SOUTH CARROLLTON.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	70	70
Gravel	27	97
White shale	8	105
Black shale	10	115
Coal (No. 11 ?)	5	120
Black slate	10	130
Dark shell	3	133
White slate	27	160
Gray sand	40	200

Black slate	35	235
Coal (No. 9?)	5	240
Black slate	78	318
White lime	5	323
Dark slate	20	343
Coal	7	350
Dark slate	74	424
Gray sand	32	456
Dark slate	64	520
Gray lime	10	530
Red rock	3	533
Dark slate	67	600
Gray sand	65	665
White slate	50	715
Dark sand	30	745
Dark slâte	85	830
Dark sand	20	850
Dark slate	85	935
Dark sand	10	945
Slate and shell	75	1020
Sand	20	1040
Dark slate	55	1095
White sand	10	1105
Dark slate	195	1300
White sand—(probably base of Pottsville)	105	1405

MISSISSIPPIAN SYSTEM.

Dark lime	15	1420
Lime and slate	145	1565
Slate and shells	71	1636
Sand	50	1686
Dark lime	35	1721
White slate	10	1731
Dark lime	20	1751
Dark slate	19	1770
Red rock	25	1795
Sand and red rock	30	1825
Slate and lime shells	40	1865
Sand	20	1885
Lime and shells	62	1947
Red rock	8	1955
Dark lime	62	2017
Sand	38	2055
Gray lime	35	2090
Dark slate	20	2110
Gray sand	12	2122

The well did not reach the Devonian shale.

LOG No. 612.

WEST KENTUCKY OIL CO. No. 1.

5 miles N. E. of Hartford.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil (starts in Chester)	14	14
Lime	5	19
Blue shale	16	35
Lime and slate	65	100
Black shale	20	120
Lime and shale	4	124
Slate	24	148
Slate and sandy lime	22	170
Blue shale	15	185
Sand and lime	56	241
Blue shale	5	246
Hard lime	17	263
White sandstone	36	299
White lime	14	313
Sand—Oil show	8	321
Lime	6	327
Sandy shale	3	330
Lime	9	339
Black shale	3	342
Bluish lime	28	370
White lime	28	398
Brown lime—Oil and gas show	30	428
Hard white lime	42	470
Soft white lime	15	485
Bluish lime	5	490
Soft white lime	20	510
Hard white lime	5	515
Blue shale	5	520
Blue lime	10	530
Brown lime	10	540
White lime	20	560
Blue lime	10	570
Gray lime	10	580
White lime	20	600
Brown lime	5	605
White lime	5	610
Brown lime	10	620
Gray lime	10	630
Brown lime	7	637
White lime	6	643
Brown lime	7	650

White lime	47	697
Brown lime	5	702
White lime	6	708
Lime—Gas show	1	709
Lime—Water	11	720
Lime—Oil show	5	725
White lime	10	735
Brown lime	37	772
Hard siliceous bed	8	780
Oil sand	21	801
Sandy lime	409	1210
DEVONIAN SYSTEM.		
Black shale	100	1310
Brownish-black shale	220	1530
Black shale	120	1650
Sandy lime	21	1671
Oil sand	15	1686

OLDHAM COUNTY.

LOG No. 613.

WELL AT LA GRANGE.

(Partial record).

Strata				Feet
ORDOVICIAN SYSTEM.				
Gray lime			at	790
Dark gray lime			at	835
Light dove-colored lime*			at	930
Dark dove-colored lime			at	1025
White lime			at	1225
Dove-colored lime			at	1260
Very dark dove-colored lime	at	1315	to	1365
Dove-colored lime			at	1380
"Blue Lick" water			at	1450
Light sandy lime†	at	1450	to	1555

*Top of Tyrone is at 900, about.

†Top of Calciferous is between 1380 and 1450.

(The first few feet of the well may be Silurian but the imperfect record does not allow the change from Silurian to Ordovician to be noted.)

OWSLEY COUNTY.

LOG No. 614.

LOWER BUFFALO CREEK NEAR LEE AND OWSLEY CO. LINE.
One-half mile from Creek on North Side.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	5	5
Slate	21	26
Sand	44	70
Slate	30	100
Shells or slate	110	210
Sand	240	450
Slate	25	475
MISSISSIPPIAN SYSTEM.		
Little lime	15	490
Slate	10	500
Big lime	120	620
Slate	10	630
Lime	25	655
Sand	15	670
White slate shells	170	840
Dark slate shells	280	1120
DEVONIAN SYSTEM.		
Black slate	163	1283
White slate	3	1286
Brown shale	23	1309
Pay at		1317
Sand	11	1320

LOG No. 615.

Lessor, T. W. Cooper. Lessee, Eastern Gulf Oil Co.
Started July 1, 1918. Completed August 21, 1918.
Total Depth 1423½ feet.

	Feet	
Gas at	225	
Oil at	1330	
Salt water	1339	
Cap rock	1328	
Top first pay	1339	Water
Feet first pay	10	
Bottom first pay	1349	

Small show of oil at 1330 feet. No show of oil after salt water.

Strata	Feet	Feet	
PENNSYLVANIAN SYSTEM.			
Clay	1	5	
Slate	5	18	
Coal	18	19½	
Slate shells	19½	20	
Coal	90	94	
Slate shells	94	210	
Sand	210	225	Water
Sand	225	300	
Break slate	300	310	
Sand shells	310	380	
Slate	380	400	
MISSISSIPPIAN SYSTEM.			
Slate shells	400	490	
Big lime	490	500	6¼ in. casing
Bottom big lime	500	655	
Slate	655	675	
Shells and slate	675	745	
Slate and shells	745	805	
Red rock	805	810	
Slate and shells	810	890	
Black shale	890	920	
Slate and shells	920	1100	
Shell	1100	1102	
DEVONIAN SYSTEM.			
Brown shale	1102	1135	
White slate	1296	1302	
Black shale	1302	1328	
Top sand		1328	
Salt water		1338	
Casing 4 7-8		1348	

Pulled casing and reamed to 1358 feet.
Set casing at 1358 feet.
White sand 10 feet below casing.
Brown sand 50 feet in sand, looked very good.
Dark brown sand at 60 feet.
Gray sand from 70 feet to 1423½ feet.
8¼ in. casing—47 feet out.
6¼ in. casing—500 feet out.
4⅞ in. casing—1349 feet out.
Total depth 1423½ feet.
Well plugged and abandoned.
Arnes Drilling Co., Contractors.

PERRY COUNTY.

LOG No. 616.

WELL AT CHAVIES STATION.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	36	36
Slate, gravel, etc.	74	110
Sand	20	130
Lime (?)	15	145
Slate	115	260
Sand	35	295
Slate and shale	205	500
Sand	50	550
Lime (?)	50	600
Shale	100	700
Sand—salt water	220	920
Slate	5	925
Sand	60	985
Black slate (base of Pottsville)	25	1010
MISSISSIPPIAN SYSTEM.		
Red shale	18	1028
Sand	212	1240
Red rock	5	1245
Slate and shells	64	1309
Lime	12	1321
Slate	14	1335
"Pencil cave"	6	1341
"Big lime"	200	1541
Sand and lime	23	1564
Red shale	51	1615
Sandy slate	50	1665
Black slate	135	1800
Sandy lime	20	1820
DEVONIAN SYSTEM.		
Black shale—gas show at 2075	315	2135
Sand and lime	16	2151
Black slate	22	2173
SILURIAN SYSTEM.		
Slate	33	2206
Sandy lime	194	2400
Slate	58	2458
Red shale	32	2490
Slate	56	2546
Lime and shale	70	2616
Slate and lime	29	2645
Pink shale	10	2655
Lime and shells	90	2745

LOG No. 617.

WELL 1 MILE NORTH OF CHARIER STATION.
Elevation 790, Approx.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand and gravel	17	17
Black slate	63	80
White sand	55	135
Dark slate	82	217
Sand	44	261
Slate	7	268
Sand	43	311
Slate	196	507
White sand	45	552
Slate	30	582
Sand	313	895
Sand and slate	15	910
Sand—salt water at 1126 and 1165	267	1177
Slate (base of Pottsville)	5	1182
MISSISSIPPIAN SYSTEM.		
Red shale	8	1190
Sand	19	1209
Red shale	7	1216
Black slate	45	1261
Sand	7	1268
Slate	7	1275
Lime	21	1296
Black slate	24	1320
Lime—"Big lime"	233	1553
Slate and shale	87	1640
Sand	235	1875
DEVONIAN SYSTEM.		
Black shale (Devonian)	270	2145
Slate	34	2179
SILURIAN SYSTEM.		
Lime	168	2347
Sand	17	2364
Lime	25	2389
ORDOVICIAN SYSTEM.		
Slate	396	2785
Lime	315	3100

LOG No. 618.

WELL AT FORKS OF BIG CREEK.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Black slate	305	305
Sand—trace of oil at 372	230	535
Slate	15	550
Sand	50	600
Slate	15	615
Sand	85	700
Slate	15	715
Sand—salt water at 1190	598	1313
MISSISSIPPIAN SYSTEM.		
Lime	27	1340
Sand	14	1354
Slate	31	1385
Lime	31	1416
Slate	8	1424
Sand	12	1436
Slate	46	1482
Sand—salt water at 1510-1517	35	1517

LOG No. 619.

BUFFALO CREEK.
Rice Oil Co.
Casing Head Elevation 879 ft.
Started March 21, 1917. Completed July 1, 1917.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand gravel	10	10
Sand	5	15
Slate cave with water	10	25
Sand	20	45
Slate with water	5	50
Sand	40	90
Slate and shells	40	130
Sandstone	20	150
Slate and shells	185	335
Three feet coal at 290.		
Sandy lime	105	440
Lime broken	35	475
Shale	25	500
Black lime	30	530
Slate	45	575
Sand	40	615

Lime, hard	8	623
Slate	62	685
Sand, hard and sharp	165	850
Slate	20	870
Black lime	15	885
Slate	15	900
Sand	140	1040
Slate, black	35	1075
Sand, hard	135	1210
Slate	6	1216
Sand, hard and close	130	1346
Slate	94	1440

MISSISSIPPIAN SYSTEM.

Sand	60	1500
Slate and shells	60	1560
Sand	85	1645
Slate	45	1690
Sand	85	1775
Sandy lime, shells and slate	75	1850
Shelly slate	50	1900
"Little Lime"	10	1910
Slate Cave, cemented "Pencil Cave"	55	1965
Big lime	230	1155
Red lime	30	2285
Slate and shells	145	2370
Lime, hard	10	2380
Slate	90	2470

DEVONIAN SYSTEM.

Black shale	330	2800
Black shale, shelly	65	2865
White shale	47	2912

SILURIAN SYSTEM.

Sandy lime	156	3068
Slate	5	3072

Gas at 2475 feet.
Gas at 2585 feet.
Salt water 1740 feet.
50 feet—10 inch casing.
1215 feet—8 inch casing.
1780 feet—6½ inch casing.
Should have been 300 feet—10 inch casing.
1965 feet—6½ inch casing.

PIKE COUNTY.

LOG No. 620. MAY FARM.

Bear Fork of Robinson Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	34	34
Gray sand	27	61
Slate	32	93
Dark sand	53	146
Black slate	3	149
Dark sand	11	160
Sandy slate	18	178
Blue sand—salt water	59	237
Black slate	7	244
White sand	78	322
Sandy slate	30	352
Black slate	32	384
Blue sand	21	405
Black slate	57	462
Sand	37	499
Black slate	67	566
Sand (Beaver and Horton)—salt water	279	845
Black slate	35	880
Sand (Pike—gas, salt water	395	1275
Black slate (base of Pottsville	32	1307
MISSISSIPPIAN SYSTEM.		
Dark slate (top of Chester)	33	1340
Sand	60	1400
Light slate	90	1490
Red shale	6	1496
Slate	33	1529
Gray sand	63	1592
Lime	8	1600
Slate	30	1630
Sand (Big Injun?)—gas	56	1686
Dark slate	65	1751

LOG No. 621.

WELL ON CEDAR CREEK.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	41	41
Light slate	23	64
Sand	10	74
Dark slate	40	114
Sand	10	124
Light slate	96	220

Coal	4	224
Dark slate	176	400
Sand	25	425
Black slate	75	500
White sand (Beaver and Horton?)	285	785
Dark slate	72	857
Sand (Pike and Salt?)	310	1167
MISSISSIPPIAN SYSTEM.		
Shelly slate	108	1275
Red shale	105	1380
White sand	40	1420
Black slate	5	1425
Sand	74	1499

LOG No. 622.

WELL ON CEDAR CREEK.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	52	52
Slate	42	94
Light sand	36	130
Light slate	88	218
Light sand	33	251
Light slate	79	330
Black slate	45	375
Gray sand	51	426
Slate	53	479
Sand (Beaver and Horton?)—gas—salt water	278	757
Black slate	64	821
Sand (Pike)	59	880
Light slate	50	930
Sand (salt sand)—gas—salt water	202	1132
MISSISSIPPIAN SYSTEM.		
Black slate	49	1181
Black sand	14	1195
Dark slate	16	1211
Dark limy sand	25	1236
Black lime	12	1248
Shelly slate	10	1258
Red shale	20	1278
Gray sand	3	1281
Red shale	69	1350
Gray lime ("Big lime"—nearly cut out)	1	1351
White sand	62	1413
Black slate	27	1440
White sand (Big Injun?)—oil—salt water	61	1501

LOG No. 623.

WELL ON BIG CREEK.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	24	24
Slate	10	34
Gray sand	12	46
Dark slate	8	54
Gray sand	35	89
Slate	10	99
Gray sand	21	120
Dark slate	4	124
Sand	15	139
Dark slate	46	185
Limy sand	15	200
Gray sand	55	255
Slate	80	335
Coal	4	339
Sand	42	381
Slate	64	445
Lime	10	455
Slate	30	485
Black sand	10	495
Slate	15	510
Sand	75	585
Slate	15	600
White sand (Beaver)	355	955
Slate	27	982
Sand (Horton)	130	1112
Coal	3	1115
Sand (Pike)—gas and salt water	134	1249
Coal	3	1252
Dark sand	12	1264
Dark slate	24	1288
White sand	152	1440
MISSISSIPPIAN SYSTEM.		
Black slate	24	1464
White sand—salt water	61	1525
"Big lime"	215	1740
Dark sand	25	1765
Slate	15	1780

Mauch Chunk cut out and replaced by Pottsville sands.

LOG No. 624. BOWLES FARM.
Hurricane Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	18	18
Gray sand	27	45
Dark slate	50	95
Gray sand	15	110
Dark slate	48	158
Gray sand	46	204
Dark slate	81	285
Gray sand	45	330
Light slate	53	383
Black slate	25	408
Gray sand	40	448
Dark slate	132	580
Gray sand	40	620
Dark slate	50	670
Sand (Beaver and Horton?)—salt water	260	930
Dark slate	52	982
White sand (Pike)—gas	59	1041
Dark slate	12	1053
Sand (Salt sand)—salt water	187	1240
MISSISSIPPIAN SYSTEM.		
Black slate	30	1270
Gray sand	32	1302
Black slate	12	1314
Limy sand	18	1332
Light slate	17	1349
White sand	13	1362
Lime	16	1378
Slate	5	1383
Red shale and slate	49	1432
Sand—gas and salt water	222	1654
Black slate	108	1762
Lime	2	1764

LOG No. 625. WELL ON POOR FARM.
2 Miles from Pikeville.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	52	52
Gray sand	8	60
Slate	75	135
Sand	29	164
Slate	76	240
Sand	40	280

Slate	154	434
Sand	24	458
Slate	60	518
White sand (Beaver and Horton?)	289	807
Black slate	56	863
White sand (Pike?)	52	915
Black slate	5	920
White sand	147	1067
Black slate	7	1074
Sand	61	1135
Slate	5	1140
Sand	12	1152
MISSISSIPPIAN SYSTEM.		
Shelly slate	35	1187
Sand	47	1234
Light slate	25	1259
Sand	20	1279
Sandy slate	12	1291
Sand	16	1307
Gray lime	12	1319
Dark slate	3	1322
Red rock	88	1410
White sand	7	1417
Black slate	15	1432
Dark lime	4	1436
Black slate	70	1506
White sand—gas	36	1542
Red slate	21	1563
White sand—salt water	27	1590

LOG No. 626.

SCHONSBERG WELL.

Caney Fork of Johns Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	42	42
Slate	30	72
Gray sand	32	104
Slate	216	320
Gray sand	35	355
Slate	66	421
Sand	57	478
Slate	13	49
Lime	8	499
Sand	9	508
Lime	5	513
Sand	8	521

Slate	20	541
Sand	22	563
Slate	12	575
Sand	65	640
Slate	15	655
White sand (Beaver and Horton)	230	885
Slate	30	915
Sand (Pike and Salt)	421	1336
MISSISSIPPIAN SYSTEM.		
Red rock	18	1354
Slate	5	1359
Sand	77	1436
Red shale and slate	64	1500
"Big lime"—oil and gas at 1615	240	1740
Slate	55	1795
Reddish sand	80	1875
Slate	260	2135

LOG No. 627.

HENRY TAYLOR FARM.
Brushy Fork of Johns Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	13	13
Sand	42	55
Slate	160	215
Sand	70	285
Black slate	50	335
Coal	5	340
Light slate	7	347
Sand	38	385
Dark slate	113	498
Sand	69	567
Dark slate	65	632
Sand	33	665
Black slate	35	700
Sand	17	712
Slate	26	738
Sand (Beaver)—gas and salt water	72	810
Slate	11	821
Sand (Horton)	99	920
Dark slate	5	925
White sand } salt water	47	972
Dark slate } (Pike)	5	977
White sand } salt water	41	1018
Sandy slate	54	1072
White, pebbly sand—gas and salt water	129	1201

MISSISSIPPIAN SYSTEM.

Lime (top of Chester)	15	1216
Black slate	18	1234
Red shale	22	1256
Blue slate	34	1290
Lime	15	1305
Sand—salt water	83	1388
Slate	2	1390

LOG No. 628.

FLEM MAYNARD FARM.

Big Branch of Brushy Fork.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	9	9
Sand	4	13
Light slate	27	40
Gray sand	54	94
Dark slate	11	105
White sand	37	142
Dark slate	62	204
White sand	30	234
Black slate	16	250
Coal	3	253
Light slate	7	260
Gray sand	105	365
Dark Slate	31	396
Coal	4	400
Dark slate	10	410
Sand (Beaver)—salt water	82	492
Black slate	70	562
White sand (Horton)	21	583
Slate	208	791
White sand (Pike)—gas and salt water	251	1042
Black slate	13	1055
Sand	12	1067
Black slate	68	1135
Sand (salt sand)—gas and salt water	152	1287
Coal	1	1288
Sand (base of Pottsville)	24	1312

MISSISSIPPIAN SYSTEM.		
Red shale	12	1324
Sandy slate	15	1339
White sand	61	1400
Lime	12	1412
Slate	8	1420
Sand	77	1497
Sandy slate	24	1521
Gray sand	18	1539
Sandy slate	27	1566
"Big lime"	214	1780
Blue sand	20	1800
Slate	410	2210
DEVONIAN SYSTEM.		
Dark brown slate	47	2257

LOG No. 629.

JEFF HENDRICK WELL.

Upper Chloe Creek.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	41	41
Black slate	49	90
Gray sand	18	108
Coal	2	110
Slate	50	160
Sand	20	180
Shelly slate	160	340
Gray sand	52	392
Dark slate	83	475
Gray sand	55	530
Shelly slate	143	673
White sand	62	735
Slate	20	755
Gray sand	21	776
White sand	294	1070
Coal	1	1071
Gray and white sand	81	1152
Slate	11	1162
White sand	74	1236
Slate	106	1342
White sand—salt water at 1362	52	1394

MISSISSIPPIAN SYSTEM.		
Slate	44	1438
Sand	14	1452
Slate	24	1476
Sand	18	1494
Slate	20	1514
White sand	66	1570
Slate	21	1591
Very black slate	6	1597
Gray and white sand	12	1609
Slate	41	1650
Gray sand	29	1679
White sand	19	1698
Slate	20	1718
Gray sand	18	1736
Slate	5	1741
Lime	24	1765
Red shale	14	1779
Lime	136	1915
Slate	10	1925
Sandy lime	35	1960
Slate (caving)	30	1990

POWELL COUNTY.

LOG No. 630.

J. F. MARTIN FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	3	3
Shale	192	195
DEVONIAN SYSTEM.		
Black shale } (Devonian)	129	324
Light shale } (Devonian)	30	354
Brown lime—"Ragland sand"—gas show	20	374
SILURIAN SYSTEM.		
Shale	113	487
Lime	10	497
Shale	23	520
Lime	30	550
Shale	15	565
ORDOVICIAN SYSTEM.		
Lime	253	818

LOG No. 631.

J. F. MARTIN FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	5	5
Shale	270	275

DEVONIAN SYSTEM.		
Black shale	125	400
Lime—"Ragland sand"—gas show	24	424
SILURIAN SYSTEM.		
Shale	140	564
Brown lime	10	574
Shale	6	580
Lime	95	675
Shale	12	687
ORDOVICIAN SYSTEM.		
Lime	122	809

LOG No. 632.

J. F. MARTIN FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	10	10
Shale	215	225
DEVONIAN SYSTEM.		
Black shale	125	350
Lime—"Ragland sand"—gas	24	374
SILURIAN SYSTEM.		
Shale	141	515
Brown lime	10	525
Shale	5	530
Lime—oil show	80	610
Shale	15	625
ORDOVICIAN SYSTEM.		
Lime	150	775
Shale	10	785
Lime	29	814

LOG No. 633.

WHITE FARM—No. 5.
(Partial record).

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	24	24
Sand	160	184
MISSISSIPPIAN SYSTEM.		
Interval.		
"Big lime"	106	472
Interval.		
DEVONIAN SYSTEM.		
Brown shale	148	1116
Fire clay	19	1135
Top of "oil sand"		1135

LOG No. 634.

WILLIAMS No. 1.
Stanton.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Soil and sand	24	24
Black shale } (Devonian)	108	132
White shale } (Devonian)	18	150
"Irvine sand"—gas at 155	8	158
Light shale	59	217
"Oil sand"—oil	7	224

LOG No. 635.

STARKS FARM.
Barker Branch.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	39	39
Lime	125	164
Shale	101	265
Lime shale	98	363
Gray shale	383	746
"Gas sand"	18	764
DEVONIAN SYSTEM.		
Black shale	137	901
"Fire clay"	15	916
"Oil sand"—oil	18	934

LOG No. 636.

WINGATE ANDERSON FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	20	20
Shale	30	50
Lime	5	55
Shale	35	90
DEVONIAN SYSTEM.		
Black shale	135	225
Light shale	140	365
Lime—oil show at 400. Gas show at 1200	985	1350
Brown lime (Tyrone?)	262	1612
(Ragland sand cut out).		
Base of Devonian indefinite.		

LOG No. 637.

SUSAN HANKS FARM.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Clay	4	4
Black shale	126	130
Lime—"Ragland sand"	13	143
SILURIAN SYSTEM.		
Shale	52	195
Lime—oil show	3	198
Shale	12	210
Lime—salt water	15	225
Shale	10	235
Lime	78	313

LOG No. 638.

J. R. EWEN FARM.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Clay	22	22
Black shale	134	156
Lime—"Ragland sand"	10	166
SILURIAN SYSTEM.		
Shale	54	220
Lime	3	223
Shale	10	233
Lime	320	553
(Base of Silurian not defined.)		

LOG No. 639.

O. M. LAW FARM.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	12	12
Black shale	138	150
Lime—"Ragland sand"	10	160
SILURIAN SYSTEM.		
Shale	40	200
Lime—oil show	3	203
Shale	11	214
Lime	292	506
(Base of Silurian not defined.)		

LOG. No. 640. C. B. SKIDMORE FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	25	25
Shale	100	125
Lime	2	127
Shale	10	137
DEVONIAN SYSTEM.		
Black shale	170	307
SILURIAN SYSTEM.		
Light shale	143	450
Lime	1059	1509

(Ragland sand cut out.)

(Base of Silurian not defined.)

LOG No. 641. WM. TRUETT FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	10	10
Shale	90	100
Red rock	15	115
Shale	45	160
DEVONIAN SYSTEM.		
Black shale } (Devonian)	120	280
Light shale } (Devonian)	10	290
Lime—"Ragland sand"	5	295
SILURIAN SYSTEM.		
Shale	115	410
Lime	10	420
Shale	20	440
Lime	10	450
Shale	10	460
Lime	154	614

(Base of Silurian not defined.)

LOG No. 642. MILES FORKNER FARM.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Clay	14	14
Black shale	118	132
Light shale	3	135
Lime—"Ragland sand"	7	142
SILURIAN SYSTEM.		
Shale	53	195
Lime	3	198
Shale	12	210
Gray lime—oil show	20	230
Lime	21	251

LOG No. 644.

JAS. H. LANE FARM.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Soil	22	22
Black shale	80	102
Brown lime—"Ragland sand"—Gas and salt water	10	112
SILURIAN SYSTEM.		
Shale	48	160
Lime	15	175
Shale	5	180
Lime	627	807
(Base of Silurian not defined.)		

LOG No. 645.

ROBERT ROSE FARM.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Slate and gravel	13	13
Black Shale (Devonian)	87	100
Lime— "Ragland sand"— gas and salt water	20	120
SILURIAN SYSTEM.		
Shale	80	200
Lime	680	880
(Base of Silurian not defined.)		

LOG No. 646.

JAMES WELSH FARM.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Clay	17	17
Black shale	8	25
Brown lime—"Ragland sand"	24	49
SILURIAN SYSTEM.		
Shale	65	114
Blue lime—Oil at 133	19	133
Shale	14	147
Lime—Gas at 310	534	681
Brown shale	19	700
Lime	251	951
(Base of Silurian not defined.)		

LOG No. 647.

LUTHER STEPHENS FARM.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Soil	13	13
Black shale	117	130
SILURIAN SYSTEM.		
Light shale	62	192
Brown lime—Oil show	4	196
Blue shale	10	206
Lime	1001	1207
(Ragland sand cut out.)		
(Base of Silurian not defined.)		

LOG No. 648.

LUTHER STEPHENS FARM.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Clay	14	14
Black shale	126	140
Lime—"Ragland sand"	10	150
SILURIAN SYSTEM.		
Light shale	46	195
Brown lime—oil show	3	196
Shale	11	209
Lime	95	304

LOG No. 649.

O. A. LISLE FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	15	15
Lime	2	17
Shale	15	32
DEVONIAN SYSTEM.		
Black shale	135	167
Lime—"Ragland sand"	10	177
SILURIAN SYSTEM.		
Shale	50	227
Lime	2	229
Shale	86	315
ORDOVICIAN SYSTEM.		
Lime	522	837

LOG No. 650.

A. M. SWANGO FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	11	11
Shale	10	21
Lime	3	24
DEVONIAN SYSTEM.		
Black shale	163	137
Lime—"Ragland sand"	10	197
SILURIAN SYSTEM.		
Shale	43	240
Lime	3	243
Shale	10	253
Blue lime	997	1250
Brown lime	251	1501
(Base of Silurian not defined.)		

LOG No. 651.

MAXWELL FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	18	18
DEVONIAN SYSTEM.		
Black shale	160	178
Lime—"Ragland sand"	5	183
SILURIAN SYSTEM.		
Shale	107	290
Lime—Oil show	5	295
Shale	30	325
ORDOVICIAN SYSTEM.		
Gray lime—Oil show	10	335
Blue lime	85	420
Gray lime—Oil show	2	422
Blue lime	318	740
Gray lime	62	802

LOG No. 652.

ROBERT BOYD FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
"Big lime"	120	120
Green shale	20	140
White shale	470	610

DEVONIAN SYSTEM.		
Black shale	147	757
"Fire clay" (shale)	18	775
Lime—"Oil sand"—Salt water at 776	11	786
White lime	12	798
SILURIAN SYSTEM.		
Blue lime—Salt water	10	808
White lime	21	829
Blue lime	26	855

PULASKI COUNTY.

LOG No. 653.

WELL AT EUBANKS.

(Partial record.)

Strata	
MISSISSIPPIAN SYSTEM.	
Light lime	at 50
DEVONIAN SYSTEM.	
Dark shale	at 120 and 160
Black shale	at 360 to 400
Gray lime	at 400 and 500
Dark shaly lime	at 540
SILURIAN SYSTEM.	
Light shale	at 675
Motted red lime	at 695 and 700
Gray and white lime	at 728
ORDOVICIAN SYSTEM.	
Gray lime—Gas show	at 800
Very dark lime	at 825, 870 and [illegible]
Light gray lime	at 1045, 1100 and 1125
Top of Tyrone about	at 1200
Dove-colored lime	at 1230, 1235 and 1240
Light green sandstone	at 1245
Dove-colored lime	at 1250, 1330, 1400 and 1520
Bottom	at 1520

LOG No. 654.

J. R. C. LATHAM FARM.

Near Rockcastle line.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	125	125
Blue shale	175	300
DEVONIAN SYSTEM.		
Brown shale	62	362
Lime—Oil show at 365	3	365
Sand	110	475

ROCKCASTLE COUNTY.

LOG No. 655.

WELL NEAR MULLENS STATION.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sandstone (base of Pottsville)	100	100
MISSISSIPPIAN SYSTEM.		
"Big lime"	100	200
Sand	150	350
Shale	200	550
DEVONIAN SYSTEM.		
Black shale	150	700
Sandy lime—"Ragland sand"	20	720
SILURIAN SYSTEM.		
Shale	30	750
Lime	740	1490

LOG No. 656.

E. M. CUMMINS FARM
3 Miles W. of Mt. Vernon.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	80	80
Blue shale	230	310
DEVONIAN SYSTEM.		
Black shale	70	380
"Fire-clay" (Shale)	14	394
White sand (?)	35	429
SILURIAN SYSTEM.		
"Fire clay" (Shale)	8	437
Lime	813	1250
(Base of Silurian not defined.)		

LOG No. 657.

JAKE BRAY FARM.
4 Miles W. of Mt. Vernon.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	100	100
Blue shale	260	100
DEVONIAN SYSTEM.		
Black shale (Devonian)	70	430
Lime	20	450
Lime and sand—Oil show at 453	6	456
SILURIAN SYSTEM.		
Lime	14	470

LOG No. 658.

WILMER CHESNUT FARM

3 Miles S. E. of Mt. Vernon.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	10	10
Lime	23	33
Blue slate	10	43
Lime	5	48
Clay	1	49
Lime	19	68
Blue slate	22	90
Lime	17	107
Blue shale	87	194
Lime	56	250
Blue shale	100	350
DEVONIAN SYSTEM.		
Black shale	103	453
Fire-clay (Shale)	10	463
Lime	2	465
Sand—Oil show at 502	62	527
SILURIAN SYSTEM.		
Lime	40	567
Sand—Oil show at 567	11	578
Lime	5	583

LOG No. 659.

JOSIAH MEECE FARM.

Skeggs Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	120	120
Blue shale	10	130
Lime	8	138
Blue shale	205	343
DEVONIAN SYSTEM.		
Black shale	70	413
"Fire-clay" (Shale)	14	427
Lime	32	459
SILURIAN SYSTEM.		
Yellow lime—Oil show	9	468
Lime	12	480

LOG No. 660.

H. C. KIRBY FARM.
Skeggs Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime—Oil show at 71 and 110	205	205
Blue shale—Gas show at 300	233	438
DEVONIAN SYSTEM.		
Black shale	70	508
"Fire-clay" (shale)	12	520
Sand(?)	45	565
SILURIAN SYSTEM.		
Lime	10	575

LOG No. 661.

M. F. TREADWAY FARM.
Cove Branch.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Blue shale	70	70
Lime	25	95
Blue shale	80	175
Lime	35	210
Blue shale	80	290
DEVONIAN SYSTEM.		
Brown shale	100	390
"Fire-clay" (shale)	16	406
Lime	32	409
SILURIAN SYSTEM.		
"Fire clay" (shale)	32	413
Sand—Oil show at 453	53	466
Lime	45	511
Sand—Oil show at 511	10	521
Lime	10	531

LOG No. 662.

WELL NEAR JOHNETTA.
Brush Creek.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Sand and gravel	30	30
Lime—"Big lime"	95	125
Blue shale	165	290
DEVONIAN SYSTEM.		
Black shale	115	405
Lime (Corniferous?)	10	415

SILURIAN SYSTEM.		
Green shale	50	465
Lime	10	475
Gray shale	5	480
Lime	15	495
Gray shale	10	505
Lime	218	723
(Base of Silurian not defined.)		

LOG No. 663.

WELL NEAR CLIMAX.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Sand and soil	35	35
Quicksand	2	37
Lime	130	167
Blue slate	20	187
Red rock	8	195
Blue slate	14	209
White lime	15	224
Blue slate	116	340
Gray slate	10	450
DEVONIAN SYSTEM.		
Black shale	130	580
Lime—Ragland(?)	35	615
SILURIAN SYSTEM.		
Green slate	25	640
Hard sandy lime	5	645
Gray slate	5	650
"Second sand"	18	668
Slate	2	670

ROWAN COUNTY.

LOG No. 664.

BUTTS FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Brown sand	25	25
White lime (?)	125	150
White shale	80	230
White lime (?)	110	340
White shale	110	450
Brown shale (Sunbury?)	40	490
White sand (Berea?)	10	500

DEVONIAN SYSTEM.		
Brown shale	190	690
White clay	5	695
Lime—salt water	100	795
Red rock	50	845
White shale	55	900
Lime	660	1560
(Base of Devonian not defined.)		

LOG No. 665. WELL ON TRIPLETT CREEK.
12 Miles N. E. of Morehead.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	5	5
Blue shale	62	67
Black slate (Sunbury?)	10	77
Shale—gas at 171	123	200
Red rock	6	206
DEVONIAN SYSTEM.		
Black shale (Devonian)	329	535
Lime—"Ragland sand"—oil and salt water	7	542

RUSSELL COUNTY.

LOG No. 666. A. W. McCLOUD FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Lime	365	365
Red sand	4	369
Lime	307	676
Light sand—black oil	12	688
Dark lime	62	750
Blue slate	130	880
Brown slate—"Pencil cave"	20	900
Blue lime	30	930

LOG No. 667. A. W. McCLOUD FARM.

Strata	Thickness	Depth
ORDOVICIAN SYSTEM.		
Dark lime	655	655
Light sand	8	663
Gray lime	176	839
White lime	58	897
"Pencil cave"	2	899
Gray lime	92	1591
Light sand—salt water	35	1626

(Both McCloud wells start just below the Black Shale).

LOG No. 668.

JOHN JOHNSON FARM.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Black shale	20	20
ORDOVICIAN SYSTEM.		
Blue lime—salt water at 100	670	690
Sand	10	700
Gray lime	155	855
"Pencil cave"	3	858
Dark lime	642	1500

LOG No. 669.

F. A. BOLIN FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Gray lime	123	123
Dark sand	4	127
Light slate	131	258
DEVONIAN SYSTEM.		
Black shale (Devonian)	30	288
Gray lime—gas at 970	682	970
White sand	10	980
Brown lime	130	1110
Base of Devonian indefinite.		

LOG No. 670.

G. B. WALTON FARM.

Strata	Thickness	Depth
DEVONIAN SYSTEM.		
Soil	6	6
Black shale	44	50
ORDOVICIAN SYSTEM.		
Gray lime	10	60
Dark sand	20	80
Gray lime	638	718
White sand	9	727
Gray lime	113	840
"Pencil cave"	5	845
Black lime	55	900

TAYLOR COUNTY.

LOG No. 671.

CAMPBELLSVILLE WELL.
DAVIS FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	12	12
Hard lime	100	112
Soft lime	63	175
Brown lime	35	210
Gray slate	111	321
DEVONIAN SYSTEM.		
Black shale	52	373
ORDOVICIAN SYSTEM.		
Lime	327	700
Slate and lime shells	300	1000
"Rubber" rock*	7	1007
Slate	53	1060
Lime	130	1190
Slate	30	1220
Lime	30	1250
Slate	20	1270
Lime	25	1295
Slate	5	1300

*Driller's name.

LOG No. 672.

A. HUBBARD FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Clay	4	4
Lime	166	170
DEVONIAN SYSTEM.		
Black shale (Devonian)	50	220
ORDOVICIAN SYSTEM.		
Lime	980	1200

LOG No. 673.

VAN DYKE FARM.
Tallow Creek.
(Partial record).

Strata	Feet		Feet
Devonian shale	99	to	135
Lime—oil show at 161 and 246	135	to	300

LOG No. 674. ANDY LAWLER FARM.

Pittman Creek.

2½ miles S. E. of Fin'ey.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	5	5
Shale	210	215
DEVONIAN SYSTEM.		
Back shale (Devonian)	51	266
ORDOVICIAN SYSTEM.		
Lime	10	276

Note:—Silurian absent under Taylor County.

UNION COUNTY.

LOG No. 675.

WELL AT UNIONTOWN.

Strata	Thickness	Depth
RECENT.		
Soil	110	110
PENNSYLVANIAN SYSTEM.		
Sandstone	10	120
Coal	1	121
Sandstone	26	147
Coal—No. 11	6	153
Sandstone	9	162
Clay and slate	20	182
Coal	2	184
Gray slate	48	232
Lime	100	242
Slate	43	285
Coal—No. 9	8(?)	293
Lime	6	299
Slate	64	363
Coal	10(?)	373
Slate	60	433
Sand	40	473
Slate and shale	40	513
Lime	8	521
Sand—salt water	12	533
Slate	28	561
Coal	6(?)	567
Slate	19	586
Lime	15	601
Black shale	25	626
Lime	5	631
Sand	30	661
Sand—salt water	25	686

Slate	15	701
Sand	30	731
Slate	35	766
Sand	30	796
Slate	35	831
Sand	33	864
Slate	42	906
Sand	35	941
Slate	59	1000
Lime	8	1008
Coal	2	1010
Slate and sand	77	1087

LOG No. 676.

WELL RECORD.

Sol Blue Well, No. 1, one mile east of Spring Grove, Union Co., Ky.

Strata	Thickness	Depth	Remarks.
RECENT.			
Loam	16		
Quicksand	8	24	
PENNSYLVANIAN SYSTEM.			
Slate	14	38	Water 37 ft.
Quicksand	23	62	
Blue mud	26	88	
Quicksand	11	99	Water all through
Clay	31	130	
Slate	26	156	
Lime	31	187	Gritty
Coal No. 9	2	189	
Slate	16	205	
Sand	24	229	Hard and gritty
Lime	15	244	
Coal	6	250	
Sand	15	265	Sharp
Slate	16	281	
Sand	31	312	Hard
Slate	13	325	
Coal	5	330	Show of oil and gas in coal
Slate	71	401	
Coal	5	406	
Slate	47	453	
Sand	63	516	White and hard
Slate	25	541	
Sand	21	562	
Slate	51	613	
Sand	43	656	Hard
Slate	74	730	

Coal	6	736	
Slate	107	843	
Sand	101	944	(Water, 858 ft. Nice show of oil 883 ft. Hole full of salt water 898ft.)
Slate	99	1043	
Coal	2	1045	Bell
Lime	6	1051	
Slate	11	1062	
Lime	17	1079	Gritty
Sand	73	1152	Water 1083 ft.
Slate	73	1225	
Sand and shells	19	1244	
Sand	105	1349	Water 1315 ft.
MISSISSIPPIAN SYSTEM.			
Slate	30	1379	
Sand	22	1401	Broken
Slate	5	1406	
Sand	10	1416	Hard
Slate	5	1421	
Lime	5	1426	Hard and light
Slate	17	1443	
Sand	31	1474	Hard and close
Lime	26	1500	Hard and light brown
Sand	39	1539	(Nice show of oil at 1510 ft. Rainbow from this sand on water running over the top of 8 inch casing.)
Slate, black	4	1543	
Lime	3	1546	
Slate	11	1557	
Lime	3	1560	Hard and dark
Slate	10	1570	Hard and dark
Lime	5	1575	Hard and dark
Slate	7	1582	
Lime	30	1612	Hard and dark
Slate	4	1616	
Lime	16	1632	Hard and dark
Pink cave	10	1642	(Caved very bad; had to cement)
Lime	24	1666	Hard and dark
Slate	6	1672	Hard and dark
Lime	8	1680	Hard and dark
Slate	18	1698	
Sand gray	14	1712	(Sand smelt oily, but was broken sand)
Slate	11	1743	

Sand	25	1748	(Nice show of oil from 1725 ft. to 1730 ft. Sand hard and white)
Slate	5	1753	Black and caves
Lime	3	1756	Dark
Lime	11	1767	White and hard
Slate	34	1800	
Sand	24	1824	(Nice show of oil first screw in sand, sand very hard)
Sand shells	27	1851	
Lime	43	1894	Hard and gray
Sand	5	1899	(Sand very hard, nice show of oil)
Slate	19	1918	
Red rock	4	1922	Caves
Slate	27	1949	Caves

Sand, top 1949 ft. Nice show of oil from 1952 ft. to 1962 ft., sand very hard and sharp.

Two eight inch bailers of water from 1967 ft. to 1978 ft. Hole full of water at 1984 ft.

Water was plugged off at 1967 ft., with Robison plug and lead, shot loosed plugs and hole filled up with water after shot.

Well was drilled by the Betty B. Oil & Gas Co.

(Base of Pottsville indefinite.)

WARREN COUNTY.

LOG No. 677. WELL AT BOWLING GREEN

(From drillings).

MISSISSIPPIAN SYSTEM.

White oolite.

Gray lime	at 18, 25 and 30
Light gray oolite	at 36
Fine-grained white lime	at 42 and 46 to 70
Light gray lime	at 77, 90, 94 and 98
White lime	at 100
Light brown lime	at 106
Light gray lime	at 112, 117, 130, 135, 144 and 156 to 170
Dark gray lime	at 183
Gray lime shale	at 189
Dark gray lime	at 195, 205 and 210 to 230
Black lime	at 235
Dark gray lime	at 240
Light brown lime	at 253
Gray lime	at 255 and 260
Dark lime	at 265
Brown lime	at 270

Dark gray lime ....at 278 and 284
Brown lime ....at 287
Gray lime ....at 288, 290, 294, 300, 305, 310 and 315
Very dark lime ....at 325 and 330
Gray lime—oil at 363......................at 340, 348, 350 and 358 to 380
Gray lime shale ....at 400 to 420
Gray lime ....at 425 and 430
Gray lime and shale ....at 435, 440, 445 and 450
Gray and white limes ....at 455
Gray lime and shale ....at 460 and 465
Gray and white lime ....at 470
Gray lime ....at 475
Gray lime and white shale ....at 485
Dark limy shale ....at 490 to 501
Gray lime and limy shales ....506, 510 and 515
Gray limy shale ....at 520 to 530
Dark lime and limy shales ....at 535 to 665
Black slate ....at 670 to 680
Very dark limy shale ....at 685
Brown impure lime ....at 690
Dark impure lime ....at 695 and 700
Gray and white lime ....at 705

DEVONIAN SYSTEM.

Black shale ....at 708 to 760
Dark brown sandy lime ....at 765 and 770
Mixed back, white and gray limes ....at 775
Fine-grained white lime ....at 780

SILURIAN SYSTEM.

Fine-grained yellowish lime ....at 785 and 790
Fine-grained white lime ....at 795 to 875
Gray lime ....at 880 to 890
Very light lime ....at 895 and 900
Gray lime ....at 910
Light lime ....at 915 to 935
Mottled red lime ....at 940

ORDOVICIAN SYSTEM.

Gray lime ....at 945 and 950
Light and gray limes ....at 955, 960, 965, 975 and 980
Gray lime and shale ....at 985
Mottled gray and white lime ....at 990
Gray lime ....at 995 to 1010 and 1015
Light lime ....at 1020 and 1025
Gray lime and shale ....at 1930 to 1095
Light and gray limes ....at 1100 to 1185
White lime ....at 1190
Gray limes ....at 1195 to 1420
Dark limy shale ....at 1425

Gray lime	at 1430 to 1440
Black and white limes	at 1445
Gray lime	at 1450 to 1460
Brown lime	at 1465
Gray lime	at 1470 to 1595
Light lime	at 1600 to 1605
Dark and light limes	at 1610 to 1660
Light dove-colored lime (top of Tyrone)	at 1660 to 1670
Gray and light limes	at 1685 to 1715
Very dark lime	at 1720 to 1730
Black lime	at 1735
Dark brown lime	at 1740 and 1745
Black lime	at 1750
Dark brown lime	at 1755
Gray lime	at 1760 and 1765
Very dark lime	at 1770
Gray lime	at 1775
Very dark lime	at 1780

LOG No. 678. STAHL FARM.

West of Bowling Green.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	4	4
White lime	211	215
Brown lime—black sulphur water at 295	85	300
White lime	150	450
Brown lime—"Blue Lick" water at 560	110	560
Lime	40	600
Blue shale	5	605
Hard lime	10	615
White lime	85	700
White shale	1	701
Brown lime	149	850
White lime	60	910
Blue lime	35	945
DEVONIAN SYSTEM.		
Black shale	110	1055
Brown lime	10	1065
SILURIAN SYSTEM.		
White lime	5	1070
Blue lime	25	1095
Cream-colored lime—oil	10	1105
Brown lime	6	1111
Cream-colored lime—oil	10	1121
Broken lime	19	1140
Very fine sand (lime?)	3	1143

LOG No. 679.

LARMON WELL No. 1.
Near Alvaton

Strata	Thickness	Depth	Remarks
MISSISSIPPIAN SYSTEM.			
Clay	25	25	
Limestone	30	55	
Lime shells	20	75	
Slate	5	80	
Soapstone	3	83	
Limestone	20	103	
Limestone	7	110	
Sandy lime	5	115	Little gas
Limestone	45	160	
Lime shells	40	200	
Sand shells	15	215	Cased 6¼ casing
Brown lime	28	243	Gas, oil and salt
Sandy lime	12	255	water 1 pt.
Limestone	4	259	12 hrs.
Shale	10	269	
Limestone	14	283	
Shale, sandy	45	328	
Limestone	6	334	
Shale, sandy	11	345	Mixed with
Limestone	11	356	hard shells
Slate pencil	19	375	Not black
Lime, shelly	23	398	Flinty shells
Slate	7	405	
Sand shells	15	420	Mixed with
Slate	4	425	flinty shells
Limestone	45	470	
Lime shells	5	475	
Slate and shells	70	545	Mixed with lime
Limestone	12	557	
Shale	6	563	
Lime shell	1	564	
DEVONIAN SYSTEM.			
Shale	20	584	
Shale	29	612	Top of oil
Limestone	4	616	Sand oil 616
Lime, sandy	20	636	
SILURIAN SYSTEM.			
Limestone	14	650	
Limestone, sandy	5	655	Should be 2d pay
Limestone	5	660	

Limestone, sandy	5	665	
Soapstone and sand	14	679	
Limestone	4	683	
Limestone	5	688	
Limestone	4	692	
Shale sandy	32	724	Well finished

LOG No. 680.

LUTHER JACKSON FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
White lime	35	35
Gray lime	105	140
White lime	120	260
Gray lime	315	575
Blue lime	90	665
Gray lime	30	695
Blue lime	315	1010
DEVONIAN SYSTEM.		
Black shale	102	1112
Gray lime—oil show	56	1168
SILURIAN SYSTEM.		
Light brown lime	10	1178
Gray lime	15	1193
Brown lime	8	1201
Light gray lime—oil show	7	1208
White lime	6	1214
Light gray lime	25	1239
White lime	5	1244
Light gray lime	28	1272
Gray lime	30	1302
Brown lime	33	1335
Gray lime with blue shale streaks	240	1575
Red rock	10	1585
ORDOVICIAN SYSTEM.		
Soft broken lime	305	1890
Hard blue lime	98	1988
Brown sand	4	1992
Hard brown lime	5	1997
Dark blue shale	10	2007
Blue lime	31	2038

LOG No. 681.

E. HARRIS WELL No. 1.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	5	5
Lime	80	85
Slate	85	170
Lime	10	180
Slate	32	212
Brown sand	8	220
Slate	45	265
Gray sand	11	276
Black slate	4	280
"Oil sand"—oil show at 285	120	400
Slate	65	465
Gray sand	55	520
Black slate	194	714
DEVONIAN SYSTEM.		
Brown slate	76	790
"Cap" rock	4	794
White lime	28	822
"Oil sand"	4	826
SILURIAN SYSTEM.		
Lime	50	876
Lime and shale	76	952

LOG No. 682.

BATES FARM.
(Partial record).

MISSISSIPPIAN SYSTEM.	
Oil show	at 230
Oil show	at 280
White lime	at 340
White lime and gas	at 383
Gray lime	at 405
Green shale—gas	at 446
DEVONIAN SYSTEM.	
Black shale	at 492
Cap rock—gas	at 554
Oil sand	at 564
Blue lime	at 569
"Salt sand"	at 574
2d "salt sand"	at 579
Gray lime	at 589
"3d sand"	at 594
SILURIAN SYSTEM.	
Bottom	at 640

LOG No. 683.

GARRISON FARM.
East of Bowling Green.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	27	27
Lime	105	132
"Gas sand"	5	137
Lime	63	200
"Gas sand"	10	210
Lime	135	345
Green slate	37	382
Broken lime	8	390
DEVONIAN SYSTEM.		
Black shale	60	450
Brown lime	4	454
White lime	8	462
Brown lime—gas	28	490
SILURIAN SYSTEM.		
White lime	8	498
Brown lime	12	510
Gray lime	15	525
Brown lime—oil	12	537
Gray lime	45	582
Brown lime	8	590
Gray lime	10	600

LOG No. 684.

B. F. AMOS FARM.
Near Oak'and.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Red clay	14	14
Lime	156	170
Sand	25	195
Lime	76	271
S ate	6	277
Lime	233	510
Slate	12	522
Lime	118	640
DEVONIAN SYSTEM.		
Brown shale	82	722
Lime	102	824
Sand—gas	24	848
Lime	177	1025
Red rock	44	1069

ORDOVICIAN SYSTEM.

Lime	273	1342
Slate	116	1458
Lime	19	1477
Slate	6	1483
Lime	67	1550
Trenton*	59	1609

*Driller's distinction.

LOG No. 685.

THE ROBERT HURD WELL.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	6	6
Broken stone	10	16
Yellow limestone	37	53
White limestone	42	95
White limestone	261	356
Brown limestone	50	406
White limestone	24	430
Blue limestone	50	480
Blue limestone fossils	180	660
Blue shale	52	712
Blue limestone fossils	33	745
White limestone	6	751
Dark shells	66	817
Lighter shells	68	875
Gray limestone	71	946
DEVONIAN SYSTEM.		
Black shale	185	1101
Grey limestone	10	1141
White limestone	5	1146
Gray limestone	22	1168
Dark limestone	15	1183
Gray limestone	20	1203
Darker gray limestone	35	1238
Gritty limestone	30	1268
Darker limestone	15	1283
White limestone	5	1288
Broken limestone	46	1334

Showed oil at 1163
Showed oil at 1183
Showed oil at 1185

LOG No. 686. BUNCH WELL—No. 1.

Elevation 580 ft.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	10	10
Gray limestone	528	538
DEVONIAN SYSTEM.		
Black shale	60	598
Blue limestone	6	604
Lime sand	10	614

LOG No. 687. HUNT WELL.

Elevation 637 ft.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	12	12
White limestone	521	533
DEVONIAN SYSTEM.		
Black shale	64	597
Blue limestone	5	602
Lime sand	8	610
Dark limestone	126	736

LOG No. 688. BATES WELL.

Elevation 608 ft.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
White limestone	25	25
Gray limestone	423	448
Green shale	47	495
DEVONIAN SYSTEM.		
Black shale	60	555
Blue limestone	5	560
Lime sand	10	570
Gray limestone	35	605
Blue clay	5	610
Gray limestone	30	640

LOG No. 689.

A. M. KIRBY WELL.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Blue limestone	6	6
Flint	24	30
Gray limestone	15	45
Blue limestone	63	108
Yellow shale	8	116

Blue limestone	4	120
Gray limestone	30	150
Blue limestone	25	175
Gray limestone	49	224
Brown limestone	41	265
Lighter limestone	20	285
White limestone	35	320
Light gray limestone	15	335
White limestone	10	345
Blue limestone	35	400
DEVONIAN SYSTEM.		
Black shale	40	440
Blue lime	63	503
Lime sand	12	515
Blue limestone	10	525
Lime sand	15	540
Blue limestone	10	550
Lime sand	20	570
Blue limestone	15	580

Gas well.

LOG No. 690.

MOODY WELL.
Elevation 518 ft.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	366	
DEVONIAN SYSTEM.		
Black shale	50	416
Blue limestone	8	424
Lime sand	7	431
Brown limestone	15	446
Lime sand	20	466

LOG No. 691.

SANSON WELL.
Elevation 529 ft.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
White limestone	363	
DEVONIAN SYSTEM.		
Black shale	52	415
Blue limestone	8	423

Thickness of sands not given.

LOG No. 692. EWING WILLOWBY WELL—No. 2.
Elevation 576 ft.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	329	
DEVONIAN SYSTEM.		
Black shale	51	380
Bottom of well		414

LOG No. 693. JEFF WILLOWBY WELL.
Elevation 520 ft.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	251	
DEVONIAN SYSTEM.		
Black shale	21	272
Blue lime	10	282

Thickness of sands not given.

LOG No. 694. EDWIN WILLOWBY WELL.
Elevation 610 ft.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	360	
DEVONIAN SYSTEM.		
Black shale	63	413
Blue limestone	81	421
SILURIAN SYSTEM.		
Brown limestone	14	435
Lime sand	17	452
Limestone	132	584
Lime sand	29	613

LOG No. 695. MANSFIELD WILLOWBY WELL.
Elevation 520 ft.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	205	205
Green shale	35	240
DEVONIAN SYSTEM.		
Black shale	55	295
Lime sand	15	310
Hard blue limestone	40	350
SILURIAN SYSTEM.		
Slate	20	370
Limestone	30	400
Slate	2	402

LOG No. 696. A. T. DIGGINS WELL.
Elevation 518 ft.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	380	
DEVONIAN SYSTEM.		
Black shale	50	430
Lime sand	3	433
Well not completed.		

LOG No. 697. DUNCAN WELL.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	850	850
Brown sha'e	40	890
Black shale	140	1030
White limestone	50	1080
Grey limestone	5	1085
White limestone	15	1400
Lime sand	8	1108
White limestone	10	1118
Dark limestone	13	1131
Lime sand	14	1145
Blue limestone	11	1156
Red rock	5	1161
Brown limestone	24	1185
(Base of Mississippian indefinite.)		

LOG No. 698. MEEKS WELL—No. 1.
Elevation 580 ft.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	359	309
DEVONIAN SYSTEM.		
Black shale	50	409
Blue limestone	11	420
Lime sand	9	429

LOG No. 699. MEEKS WELL—No. 2.
Elevation 589 ft.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	377	
DEVONIAN SYSTEM.		
Black shale	51	428
Blue limestone	13	441
Lime sand	8	449

LOG No. 700.

MEEKS WELL—No. 3.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	300	
DEVONIAN SYSTEM.		
Black shale	41	351
Blue limestone	15	366
Lime sand	29	395

LOG No. 701.

CHANDLER WELL.
Elevation 436 ft.

(Partial record).

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	420	420
DEVONIAN SYSTEM.		
Black shale	60	480

LOG No. 702.

PHINNEY WELL.
Elevation 517 ft.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Limestone	152	
Green shale	54	206
DEVONIAN SYSTEM.		
Black shale	64	270
Blue limestone	7	277
Lime sand	40	317
Blue mud	3	320

WAYNE COUNTY.

LOG No. 703.

J. A. BROWN FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Soil	35	35
White lime	165	200
Hard black sand—gas at 335	138	338
Soft black slate	2	340
White sand—gas	2	342
Black lime	8	350
White lime—gas	50	400
Black slate	75	475
White lime	10	485

Black slate	5	490
White sand	12	502
White lime	48	550
Blue slate	30	580
"Beaver" sand—oil	8	588
Blue slate	2	590

LOG No. 704.

DISHMAN WELL.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
White lime	170	170
White sand	100	270
Lime	310	580
Sand ("Beaver")	30	610
DEVONIAN SYSTEM.		
Black shale	35	645
Slate and shells	35	680
SILURIAN SYSTEM.		
Lime	120	800
Slate and red rock	20	820
Soft slaty lime	448	1268
Slate and shells	28	1296
Black "pencil cave"	4	1300
Slate and shells	30	1320
White "cave"	5	1325
(Base of Silurian not defined.)		

LOG No. 705.

H. McBEATH FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime and shales	764	764
"Beaver" sand	8	772
Lime	50	822
DEVONIAN SYSTEM.		
Black shale	35	857
Lime	803	1660
White slate (top of Tyrone)	3	1663
Dark brown lime	277	1940
Lime shells and slate	260	2200
Dark brown lime	30	2230
Dark and light limes	170	2400
Flint shells	30	2430
White salt sand (Calciferous?)	5	2435
(Base of Devonian not defined.)		

LOG No. 706.

J. W. BARNES FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Lime	254	254
Gray slate	140	394
Gray and white lime and slate	46	440
DEVONIAN SYSTEM.		
Black shale	40	480
Blue lime	100	580
"Pepper and salt" lime	300	880
Brown lime	200	1080
Blue slate	10	1090
Dark lime	200	1290
Brown flint (lime?) (top of Tyrone)	60	1350
Blue lime	540	1890
White sand—oil show	25	1915
Brown flinty lime	15	1930
Light brown sand	5	1935
White lime	10	1945
Lime	10	1955
White salt sand (Calciferous?)	26	1981

(Top of Silurian indefinite in blue lime 100 feet.)

LOG No. 707.

CYRUS BROWN FARM.

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
White lime	175	175
Dark lime—gas at 205	69	244
White lime	55	299
Black lime—gas at 305	30	329
Dark lime	40	369
White lime	136	505
Dark slate	25	530
Hard shell	10	540
"Beaver sand"	13	553
DEVONIAN SYSTEM.		
Dark shale (Devonian)	40	593
Dark sand	15	608
SILURIAN SYSTEM.		
Dark lime	477	1085
Brown lime	210	1295
Dark lime	45	1340
Dark flint	5	1345
Dark lime	152	1497

(Top of Ordovician not defined, in 477.)

LOG No. 708.

JAMES RUMSEY FARM.
Gas well.
(Partial record).

Strata	Feet
MISSISSIPPIAN SYSTEM.	
"Blue Lick" water	at 165
Heavy gas flow	at 225
Light gas flow	at 310
"Stray" sand	at 388
Slate	at 423
"Beaver" sand	at 430
Blue shale and shell	at 453
DEVONIAN SYSTEM.	
Black shale (Devonian)	at 466

WEBSTER COUNTY.

LOG No. 709.

7 miles N. of Dixon at Pilden.
Lessor, W. A. Duncan. Lessee, Sarber & Dearolph.
Started October 17, 1910. Completed April, 1911.
Total Depth, 1920—Authority, C. E. Dearolph.

Strata	Top	Depth
PENNSYLVANIAN SYSTEM.		
Conductor (top soil), etc.	0	11
Hard pan, water, etc.	11	50
Slate	50	165
Coal	165	167
Slate	165	185
Coal	185	187
Slate	187	300
Sand	300	340
Slate	340	345
Coal	345	352
Shale	353	440
Sand, sharp	440	460
Shale	460	617
Coal	617	622
Shale	622	695
Sand and fresh water	695	750
Shale	750	840
Coal	840	844
Shale	844	940
Sand, sharp (light oil showing at 945, water at 950)	940	958
Lime, shells and shale	958	1095
Sand, very sharp (fresh water at 1115)	1095	1322

MISSISSIPPIAN SYSTEM.

Lime and slate	1322	1372
Sand rock (salt water plenty)	1372	1410
Slate and shells (1480 bad cave-in)	1410	1500
Black slate	1500	1514
Stray lime	1514	1519
Slate and shells	1519	1920

Sand at 1920 filled with salt water.

LOG No. 710.

WELL SOUTH OF SEBREE.
(Partial record).

Strata	Top		Depth
PENNSYLVANIAN SYSTEM.			
Dark shale	75	to	315
Gray sand	315	to	550
MISSISSIPPIAN SYSTEM.			
Gray limestone	550	to	695
Gray limestone	960	to	1016
Gray limestone	1060	to	1070
Sand	1110	to	1210
Dark limestone—oil show		at	1715
Dove-colored limestone		at	1934
Gray limestone	1934	to	1940
Shaly limestone	1940	to	1946
Dark limestone	1946	to	2081
Dark shale	2081	to	2093
Gray limestone	2093	to	2107
Very dark limestone	2107	to	2226
Dark sandy limestone	2226	to	2232
Gray limestone	2232	to	2260
Dark limestone	2260	to	2275
White limestone	3058	to	3064

Poor record; base of Mississippian, top of Devonian, top of Silurian, and top of Ordovician not defined.

LOG No. 711.

WELL NEAR TILDEN.
(Partial record).

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	28	28
Sandstone	25	53
Blue shale	87	140
Sand and slate	16	156
Coal	6	162
Fire-clay	5	167

Sandstone	13	180
Slate	9	189
Sand—oil show	13	202
Sand and slate	5	207
Coal	1	208
Sand	46	254
Slate and sand	47	301
Black slate	3	304
Coal	6	310
Fire-clay	3	313
Sand	7	320
Sand	10	330
Slate and shale	29	359
Coal	2	361
Sand	45	406
Sand and slate	5	411
Slate	65	476
Black slate	10	486
Sand	10	496
Shale	40	536
Sand	35	571
Shale	40	611
Sand—oil show	55	666
Sand and slate	25	691
White sand—salt water	60	751
Sand and slate	20	771
Sand	10	781
Slate	48	829
Coal	5	834
Fire clay	4	838
White sand	35	873
Sand and shale	35	908

MISSISSIPPIAN SYSTEM.

Lime and sand	12	920
Slate	31	951
Sand	30	981
Sand and slate	75	1056
White sand	276	1332
Black sand	10	1342
Sandy shale	20	1362
Lime and sand	67	1429

At 1600 reported strong oil show in sand. Well spoiled by reaming. A very poor record.

LOG No. 712. WELL AT SEBREE.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay and sand	52	52
Sand	6	58
Shale	66	124
Sand	58	182
Slate	33	215
Coal	1	216
Fire clay	5	221
Lime	8	229
Sandy shale	27	256
Slate	6	262
Coal	3	265
Shale	40	305
Sand	29	334
Sandy shale	75	409
Shale	15	424
Sand	15	439
Shale	20	459
Sandy shale	5	464
Black shale	28	492
Lime	2	494
Coal	3	495
Shale	24	519
Sand	6	525
Shale	2	527
Sand—oil, gas and salt water	62	589
MISSISSIPPIAN SYSTEM.		
Shale	3	592

McCREARY COUNTY.

LOG No. 713. WELL AT PINE KNOT.
(From drillings).

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	55	55
Coal	½	
Sand	28	83
Slate	10	93
Sand	112	205
Slate	10	215
Sand	95	310
Slate	10	320
Slate and sand	10	330
Sand	5	335
Slate	5	340

Sand	5	345
Slate	25	370
Sand	50	420
Slate	20	440
Sand	61	501
Coal	3½	504
Slate	56	560
Slate and sand	10	570
Sand	10	580
Slate	32	612
Sand	23	635
Slate	7	642
Sand	13	655
Slate	20	675
Sand	10	685
Slate	25	710
Sand and slate	12	722
Slate	19	741
Coal	6	747
Slate and sand	13	760
Slate	7	767
Sand	8	775
Slate and sand	10	785
Sand	15	800
Black slate—base of Pottsville	7	807
MISSISSIPPIAN SYSTEM.		
Red sand	11	818
Dark slate	3	821
Sand	6	827
Dark lime	20	847
Brown, limy shale	8	855
Dark blue slate	7	862
Reddish lime	4	866
Light brown limy shalo	10	876
Dark blue slate	4	880
Light brown imy shale	5	885
Gray limy shale and blue slate	15	900
Dark lime	55	955
Light oolitic lime	20	975
Dove-colored lime	5	980
Dark lime and shale	5	985
Light lime	20	1005
Dark lime and shale	30	1035
Dark dove-colored lime	20	1055
White and brown limes and black slate	20	1075
Light brown lime	5	1080
Gray shale	5	1085
Brown lime	20	1105

Dove-colored and white limes	190	1295
Light brown lime	5	1300
Light green, sandy lime	5	1305
Light brown, sandy lime—oil show	15	1320
Dark lime and slate	10	1330
Gray lime	20	1350
Dark limy sand	10	1360
Brown impure lime	10	1370
Dark limy slate	10	1380
Very dark lime	30	1410
Dark limy slate	5	1415
Dark lime	5	1420
Dark slate	8	1428
White and gray lime	12	1440
Light lime	30	1470
Gray and white limes	20	1490
Dark and white sands	5	1495
Gray and white sands and sandy limes	65	1560
Soft shale	5	1565
Gray sandy lime	5	1570
Dark limy shale	30	1600
DEVONIAN SYSTEM.		
Black shale (Devonian)	15	1615
Dark brown shale (Devonian)	15	1630
Black shale (Devonian)	5	1635
Dark brown shale (Devonian)	5	1640
Black shale (Devonian)	5	1645
SILURIAN SYSTEM.		
Dark green shale	30	1675
Greenish shale with lime and red shale streaks	45	1720
Red iron ore (Clinton?) at 1720.		
Iron ore, dark shale and lime	15	1735
Dark limy shale	7	1742
Dark lime and shales	43	1785
ORDOVICIAN SYSTEM		
Dark lime	55	1840
Dark gray and reddish limes	40	1880
Dark and light limes and dark slate	35	1915
Dark reddish lime	25	1940
Dark gray lime	35	1975
Dark gray and white lime	305	2280
Dark slate	10	2290
Dark gray and white limes	102	2392
Blue and white limes and gray shale	18	2410
Light gray shale	12	2422
Gray lime	30	2452
Grayish brown and white limes	59	2511

LOG No. 714. WELL AT STEARNS.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Shale	335	335
White sandstone	30	365
Shale	25	390
White sandstone	10	400
Coal	1½	401
Shale	38	440
Sandstone	70	510
Blue and gray slate	15	525
White sandstone	10	535
Slate	20	555
White sandstone	10	565
Slate	5	570
White sandstone	20	590
Slate	40	630
Coal	3½	634
Shale	11	645
Slate	12	657
Red iron ore (?)	13	670
White sand	11	681

WHITLEY COUNTY.

LOG No. 715. J. P. SHARP FARM.
Rockhold Station.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	14	14
Black shale	36	50
White lime	5	55
Coal	1½	56
Blue slate	88½	145
White sand	10	155
Black slate	30	185
White sand	20	205
Black slate	110	315
Gray sand	190	505
Black slate	40	545
White sand	165	710
Black slate	30	740
White sand—oil show	230	970
Black slate	35	1005
Sand	26	1031
Coal	2	1033
Black slate	4	1037
White sand	5	1042
Black shale--base of Pottsville	15	1057

MISSISSIPPIAN SYSTEM.		
White lime	5	1062
Black shale	4	1066
White sand	25	1091
White shale	60	1151
White lime	54	1205
White shale	50	1255
White lime	30	1285
White shale	5	1290
White lime	265	1555
Brown sand	35	1590
Blue sand	27	1617
Blue shale	188	1805
DEVONIAN SYSTEM.		
Brown shale (Devonian)	120	1925
White shale (Devonian)	15	1940
Brown shale (Devonian)	5	1945
SILURIAN SYSTEM.		
White shale	60	2005
Red shale	5	2010
White shale	35	2045
Red shale	15	2060
White shale	5	2065
White lime	70	2135
ORDOVICIAN SYSTEM.		
Shale	70	2205
White lime	25	2230

LOG No. 716.

WATER CO. WELL.
Williamsburg.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Drift	28	28
Gravel	3	31
Slate	14	45
Sand—oil at 47	24	69
Slate	11	80
Sand—oil at 87	10	90
Slate	30	120
Sand	8	128

(All in Pottsville).

LOG No. 717.

PERKINS WELL.
Williamsburg.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	20	20
Black sand	10	30
Blue slate	60	90
Sand—oil at 100	10	100
Slate	50	150
White sand	28	178
Coal	2	180
White sand	60	240
Slate	5	245
Whit sand—oil at 360	120	365
Slate	5	370
Coal	5	375
(All in Pottsville).		

LOG No. 718.

NELSON WELL No. 2.
Williamsburg.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Drift	28	28
Slate	102	130
Sand	35	160
Slate	10	175
White sand	75	250
Slate	5	255
White sand	115	370
Coal	5	375
Slate	5	380
White sand	90	470
Slate	5	475
White sand	98	573
Slate	7	580
White sand—oil at 645	68	648
Coal	2	650
Slate and shells	115	765
Slate	1	766
White sand—oil show at 770 and 805, salt water at 838	74	840
Sand	8	848
Slate	23	871
(All in Pottsville).		

LOG No. 719.

ELECTRIC LIGHT PLANT WELL.
Williamsburg.
(Partial record).

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
White sand—oil at 385	50	425
Slate	5	430
White sand	100	530
Slate	5	535
White sand	35	570
Slate	5	575
White sand—oil and gas at 605	85	660
Slate and shells	75	735
White sand—oil and gas at 745	20	755
Brown shale	11	766
White sand (base of Pottsville)	45	811
MISSISSIPPIAN SYSTEM.		
Blue slate	10	821
Pink slate—Mauch Chunk	5	826

LOG No. 720.

SUTTON FARM.
1 mile S. W. of Williamsburg.

Strata	Thickness	Depth
Soil	5	5
Sand and slate	140	145
Shale and shells	110	255
Black slate	147	402
Sand	185	587
Slate	15	602
Sand	15	617
Slate	80	697
White sand—gas at 784	87	784
Black shale and slate	19	803
Sand—oil at 957	172	975

(All in Pottsville).

LOG No. 721.

G. W. RAINS No. 2.
Near Williamsburg.
(Partial record).

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
		753
Sand—oil at 770, 790 and 811	82	835
Shale (with coal)	45	880

MISSISSIPPIAN SYSTEM.

Sand	23	903
Light shale	15	918
Lime	17	935
Dark shale	10	945
Lime	10	955
Pink slate—Mauch Chunk	45	1000
Lime	20	1020
Pink slate—Mauch Chunk	10	1030
Lime	15	1045
Light shale	5	1050
Lime	25	1075
Shale and lime	95	1170
Lime—gas at 1369	211	1381

LOG No. 722.

STEELY FARM No. 2.

1 mile N. of Williamsburg.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Sand	20	30
Slate	105	135
Sand	150	285
Lime	20	305
Sand	75	380
Lime	5	385
Coal	5	390
White sand	202	592
Shale	2	594
Black shale	30	624
Coal	2	626
Sand—salt water at 628	24	650
Slate and shells	100	750
Sand	24	774
Black slate (base of Pottsville)	6	780
MISSISSIPPIAN SYSTEM.		
Pink rock—Mauch Chunk	20	800
Blue slate	35	835
Red rock	10	845
Lime	10	855
Blue slate	7	862

LOG No. 723.

STEELY FARM No. 4.
1 mile N. of Williamsburg.

Strata	Thickness	Depth
Drift	30	30
Black slate	19	49
Sand	4	53
Black slate	82	135
White sand	170	305
Lime	5	310
White sand	28	338
Slate	2	340
Sand	40	380
Lime (?)	5	385
Coal	5	390
White sand	200	590
Slate	5	595
Black shale	20	615
Coal	2	617
White sand	33	650
Black shale	5	655
Sand	15	670
Slate	5	675
Sand	15	690
Slate	10	700
Brown shale	44	744
Sand—oil	46	790
Slate (base of Pottsville)	5	795
MISSISSIPPIAN SYSTEM.		
Pink rock—Mauch Chunk	5	800

LOG No. 724.

STEELY FARM No. 5.
1 mile N. of Williamsburg.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Drift	25	25
Sand	5	30
Slate	15	45
Sand	10	55
Slate	25	80
Black slate	55	135
White sand	200	335
Slate	5	340
White sand	40	380
Lime	5	385
Coal	5	390

White sand	202	592
Slate	3	595
Sand	55	650
Coal	2	652
Sand—gas at 660	8	660
Lime	10	670
Slate	15	685
Shale	59	744
White sand—oil at 750, 770 and 790	54	798
Slate	6	804
(All in Pottsville).		

LOG No. 725. STEELY FARM No. 8.

1 mile N. of Williamsburg.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Drift and clay	20	20
Slate	10	30
Blue shale	20	50
Coal	2	52
Slate	93	145
Gray sand	25	170
White sand	170	340
Slate	10	350
White sand	55	405
Coal	5	410
White sand—oil at 550	140	550
Sandstone	5	555
Slate	5	560
White sand	43	603
Shale	2	605
Slate	5	610
Sand	50	660
Coal	2	662
Sand	3	665
Lime	10	675
Slate	15	690
Sand	15	705
Slate and shells	20	725
Shale (base of Pottsville)	41	766
MISSISSIPPIAN SYSTEM.		
Sand and pink rock—Mauch Chunk	29	795
Red rock—Mauch Chunk	30	825
Black sand and slate	21	846
Red rock—Mauch Chunk	10	850
Black slate	4	860
Lime	10	870

Slate and shells	30	900
Slate	10	910
Red rock	10	920
Lime	5	925
Slate and shells	60	985
Slate	15	1000
Lime	35	1035
Slate	5	1040
Lime	285	1325
Granite (?)	25	1350
Lime	20	1370
Lime and flint	5	1375
Flint	15	1390
Lime and flint	30	1420
Lime	35	1455
Slate	10	1465
Black shale	25	1490
Shale	20	1510
Lime	20	1530
Slate	40	1570
Lime	10	1580
DEVONIAN SYSTEM.		
Brown shale (Devonian)	120	1700
White slate	20	1720
SILURIAN SYSTEM.		
Gray sand	5	1725
White slate	15	1740
Blue slate	30	1770
Slate and shells	50	1820
Slate	10	1830
Sand	20	1850
Slate	10	1860
Sand	10	1870
ORDOVICIAN SYSTEM.		
Sand and lime	20	1890
Lime	30	1920
Lime and red rock	15	1935
Lime	235	2170

LOG No. 726.

WELL AT MOUTH OF CLEAR FORK.

(Partial record).

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
		828
Shale	57	885
Sand (base of Pottsville	75	960

MISSISSIPPIAN SYSTEM.		
Lime	10	970
Pink rock—Mauch Chunk	35	1005
Lime	20	1025
Shale	5	1030
Lime	30	1060
Shale	30	1090
Lime	15	1105
Shale	55	1160
Lime	370	1530
Gas well.		

WOLFE COUNTY.

LOG No. 727.

BREWER FARM—No. 1.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	8	8
Shale	47	55
Sand	145	200
Blue shale	6	206
Sand	44	250
Blue shale	15	265
White sand—oil show	18	283
MISSISSIPPIAN SYSTEM.		
Blue shale—Mauch Chunk	117	400
Lime—"Big lime"	90	490
Blue shale	500	990
DEVONIAN SYSTEM.		
Brown shale	176	1166
Yellow shale	18	1184
"Cap rock"	3	1187
Sandy lime—oil show	3	1190
Lime	18	1208
SILURIAN SYSTEM.		
Sandy lime	37	1245
Brown sand (?)	2	1247
"Oil sand"	19	1266
Lime and sand	9	1275
Black sandy lime	12	1287
Light sandy lime	5	1292

LOG No. 728.

BREWER FARM—No. 2.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Clay	4	4
Sand	40	44
Shale	106	150
Sand	140	290
MISSISSIPPIAN SYSTEM.		
Blue shale	15	305
White sand	115	445
Lime—"Big lime"	85	530
White slate	500	1030
DEVONIAN SYSTEM.		
Brown shale	185	1215
White slate	8	1223
Brown shale	5	1228
"Cap rock"	7	1235
Sand (?)—oil show	6	1241
Slate	1	1242
Black lime	31	1273
SILURIAN SYSTEM.		
Sand (?)—oil at 1273	5	1278

LOG No. 729.

ISAAC HOLLON FARM.

Holly Creek.

(Partial record).

PENNSYLVANIAN SYSTEM.		
Strata	Feet	Feet
MISSISSIPPIAN SYSTEM.		
Bottom of "Big lime"	at	840
Green shale	840	850
Slate.		
Red rock.		
Brown slate	1145	1150
"Oil sand"	1178	1188
Brown slate	1190	1360
DEVONIAN SYSTEM.		
Black slate	1360	1400
Blue slate	1400	1415
Mixed slate	1420	1435
Cap rock		1450
Oil sand	1450	1471
White sand	1471	1475

LOG No. 730.

DAVE WELLS FARM—STILLWATER DISTRICT.

4 miles S. E. of Campton.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	3	3
Gray sand (water at 55 ft.)	147	150
Coal	5	155
Gray sand	290	445
Black shale	15	460
Gray sand	5	465
White sand	25	490
MISSISSIPPIAN SYSTEM.		
Little lime	20	510
Blue shale	16	526
Big lime	110	636
Green shale	20	653
Broken lime and shale (blue)	64	720
Blue shale	440	1160
DEVONIAN SYSTEM.		
Black shale	192	1352
Fire clay	20	1372
Brown shale	12	1384
Limestone (oil and gas)	20	1414
Brown lime	20	1434
Gray lime		1454

LOG No. 731.

OLD WELL AT CAMPTON.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Partly unrecorded.		
White sands and slates	420	420
St. Louis L. S.	110	530
Blue and white shales	498	1028
DEVONIAN SYSTEM.		
Devonian black shales	191	1219
Blue shale	31	1250
Oil sand	16	1266

(No mention is made of the Berea Grit, although it must have been passed through).

LOG No. 732. J. M. TERRELL WELL—No. 1.
Just north of Mary on Upper Devil Creek. Ohio Oil Company, operator. Drilled 1917. Elevation 900 ft.
(Partial record.)

Strata	Thickness		Depth
PENNSYLVANIAN SYSTEM.			
Soil	9		9
Sand	31		40
Slate	6		46
Coal	2		48
Sand	66		114
Coal	6		120
Break	8		128
Slate	43		171
Sand	71		242
Coal	9		251
Slate	12		263
Sand	28		291
Sandstone	10		301
Settling sand	30		331
MISSISSIPPIAN SYSTEM.			
Little lime	20		351
Slate	14		365
Big lime	144		509
Waverly and black shale unrecorded.			
To top of 1st sand			1251
To bottom			1268
Oil scum	1253	to	1254
Some oil	1254	to	1268
Total depth			1328

Bottom white lime 504
Top of black shale 1045

Authorities, George Center to Big Lime; contractor at well to bottom.

Also given by the Ohio Oil Co.

LOG No. 733. J. M. TAULBEE—No. 1.
At Mary, Upper Devil Creek.
Devils Creek Oil Co., Judge Center, Contractors. Elevation 875.
Dri led April 12, 1918.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	10	10
Slate	13	23
Sand	172	195
Slate	85	280
Sand	82	362
Break	12	374
Slate	31	405

MISSISSIPPIAN SYSTEM.		
Lime	20	425
Slate	10	435
Big lime	110	545
Waverly shale	550	1095
DEVONIAN SYSTEM.		
Black shale	180	1275
White clay	25	1300
"Sand"	34	1334

10-12 bbl. well; ruined by over shooting.

LOG No. 734.

I. S. MILLER—No. 1.

Drilled 1917 by Ohio Oil Co. Elevation 1000 ft.
(Partial record.)

Strata	Thickness		Depth
Top of 1st sand			1282
Bottom			1285
Gas show	1282	to	1285
Total depth			1308

Given by Ohio Oil Co., from its files September 4, 1918.

LOG No. 735.

T. C. HOLLON—No. 1.

Devils Creek Oil & Gas Company, Operators. Elevation 775. Lantry Fike Construction Company, drillers.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Surface	12	12
Sand	147	159
Blue shale	30	189
Sand	175	364
Shale	17	381
MISSISSIPPIAN SYSTEM.		
Little lime	18	399
Shale	13	412
St. Louis lime	118	530
Blue shale	530	1060
DEVONIAN SYSTEM.		
Brown shale	210	1270
White shale	18	1288
Black shale	15	1303
Top of sand		1303

LOG No. 736. WELL AT CANNELTON, INDIANA.
Opposite Hawesville, Hancock County, Ky.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Sand	47	47
Shale	110	157
White sand (base of Pottsville)	63	220
MISSISSIPPIAN SYSTEM.		
Shale	9	229
Lime	41	270
Shale	5	275
Hard white lime	55	330
Shale	16	346
Lime	6	352
White sand	5	357
Shale	3	360
Sand	13	373
Shale	23	396
Dark lime	10	406
Gray shale	30	436
White lime	9	445
Gray shale	15	460
White sand—salt water at 480	51	511
Shale	7	518
White lime—salt water at 733	218	736
Lime—salt water at 774	204	940
Dark sandy shale	87	1027
Dark brown lime	81	1108
Lime	672	1780
DEVONIAN SYSTEM.		
"Utica" shale* (probably Devonian)	120	1900
"Trenton"*	633	2533

*Driller's distinctions.

LOG No. 737.
WELL AT TELL CITY, INDIANA.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	25	25
Gray shale	15	40
Gray sand	40	80
Dark sand (base of Pottsville)	80	160
MISSISSIPPIAN SYSTEM.		
Gray and white lime (top of Chester)	30	190
Dark gray shale	30	220
"No sample"	10	230
Yellowish brown lime	5	235
Grayish-green shale	45	280

Gray lime	71	351
Gray sand	6	357
Gray lime and dark gray shale	43	400
Gray sand	15	415
Gray, red and brown shales	116	531
Gray lime	33	564
Dark gray shale	36	600
Gray sand	20	620
Lime and black shale	3	623
Gray lime	17	640
Reddish-brown shale	13	653
Gray sand	27	680
Reddish-brown shale	5	685
Gray sand (Cypress?)	62	747
"No sample"	10	757
Gray lime	168	925
Light lime	245	1170

LOG No. 738.

WELL AT CINCINNATI.
(Partial record).

Strata	Feet
ORDOVICIAN SYSTEM.	
Dark gray crystalline limestone	at 280
Gray and white sand (?)	at 290
Crystalline limestone and dark shale	at 305
Gray calcareous shales at 334, 344, 385, 450, 505, 575, 610 and	640
Soft white limestone	at 675
White calcareous shale	at 775
Fine-grained white sandy limestone (Calciferous)	815 to 1330

LOG No. 739.

WELL AT PORTSMOUTH. OHIO.
(E. O. Orton).

Strata	Thickness	Depth
MISSISSIPPIAN SYSTEM.		
Waverly	120	120
Berea (Sunbury) shale	30	150
Berea grit	50	200
Bedford shale	50	250
DEVONIAN SYSTEM.		
Devonian shales	560	810
SILURIAN SYSTEM.		
Helderburg, Niagaran and Clinton limestones	675	1485
ORDOVICIAN SYSTEM.		
Medina	50	1535
Hudson	465	2000

LOG No. 740.

WELL AT IRONTON, OHIO.
(E. O. Orton).

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Coal measures	282	282
Conglomerate and Logan group	300	582
Blue shale	30	612
Sandstone	30	642
Cuyahoga shales	348	990
Berea (Sunbury) shale	20	1010
Berea grit	47	1057
Bedford shale and sand	90	1147
DEVONIAN SYSTEM.		
Devonian shales	680	1827
Corniferous and upper Silurian limestones	584	2411
Upper Silurian and Hudson sha'e and limestone	1031	3442

(Top of Mississippian, Silurian and Ordovician indefinite.)

LOG No. 741.

HUTCHISON WELL.
3 miles S. of Kenova, W. Va.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil and quicksand	33	33
White slate	17	50
Sand	27	77
White slate	22	99
Coal	2	101
White slate	40	141
Sand	40	181
Black slate	10	191
Sand	117	308
Black slate	12	320
Sand	20	340
Black slate	51	391
Coal	2	393
Black slate	15	408
Lime shell	10	418
White slate	25	443
Sand	10	453
White slate	33	486
Sand	8	494
White slate	28	522
Sand	12	534

Black slate	20	554
Sand	15	569
Black slate	48	617
Sand	12	629
Coal	2	631
Lime shells	15	646
Black slate	28	674
Sand	45	719
Slate and shells	24	743
Salt sand—salt water	77	820
Coal	4	824
Salt sand—base of Pottsville	18	842
MISSISSIPPIAN SYSTEM.		
Red rock—Mauch Chunk	4	846
Lime shells	10	856
Sand and lime shells	96	952
Green slate	6	958
Sand	20	978
Lime shells	3	981
Sand	25	1006
Lime	32	1038
Lime and sand—Big Lime	125	1163
Black slate	10	1173
Sand	74	1247
Black slate	60	1307
Sand	30	1337
Black slate	255	1592
Black shale (Sunbury?)	25	1617
Berea grit (?)	60	1677
Blue slate	300	1977
Black sand	15	1992
DEVONIAN SYSTEM.		
Black slate	192	2184
Blue slate	8	2192
Black sand	15	2207
Black slate	52	2259
Blue slate	5	2264

LOG No. 742.

Report of Diamond Drill Prospecting Work Done for Rogers Bros. Coal Co., by Sullivan Machinery Co., Chicago, Illinois.

Near Williamson, W. Va.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Gravel and boulder	10	10
Gravel sand boulders	29	19
Broken ledge	30	1
Sandstone	70	40

Broken sandstone	100	30
Sandstone	148	48
Shale	177-6	29-6
Coal	178	-6
Shale	182	4
Sandstone	280	98
Shale	293	13
Sand shale	298	5
Shale	302	4
Coal	302-4	-4
Sandstone	367	64-8
Shale	371-6	4-6
Coal	372-2	-8
Sandstone	386	13-10
Shale	396-4	10-4
Coal	396-10	-6
Shale	405	8-2
Sand shale	423	18
Sandstone	425	2
Sand shale	454	29
Sandstone	464	10
Conglomerate ss.	474	10
Sandstone	480	6
Sand shale	492	12
Sandstone	571	79
Hard sandstone	592	21
Sandstone	601	9
Shale	602	1
Hard sandstone	622	20
Sandstone	651	29
Hard sandstone	661	10
Conglomerate ss.	677	16
Hard sandstone	705	28
Conglomerate ss.	716	11
Sandy shale	723	7
Shale	759	36
Sand shale	765	6
Sandstone	768	3
Shale	769-3	1-3
Coal	769-11	-8
Shale	774	4-1
Sand shale	778	4
Shale	779	1
Hard sandstone	840	61
Conglomerate ss.	918	78

Good flow of gas struck at 918.

LOG No. 743

WELL AT CENTRAL CITY, W. VA.
(I. C. White).

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Soil	26	26
Shale, sand and lime	94	120
Lime	7	127
Slate and fire clay	98	225
Sand	25	250
Slate	50	300
Sand—gas	30	330
B'ack slate	10	340
Gray sand	60	400
Black slate	10	410
Gray sand	85	495
White and blue slate	25	520
Sand and lime	20	540
Slate	20	560
Black slate	175	735
Gray sand	25	760
Black slate	105	865
Sand—gas and salt water	30	895
Black sand	10	905
Black slate (base of Pottsville)	30	935
MISSISSIPPIAN SYSTEM.		
Lime	5	940
Black slate	30	970
"Big lime"	150	1120
Slate	28	1148
"Big Injun" sand—salt water	177	1325
Black shale and slate	370	1695
Lime and hard sand	10	1705
Brown slate (Sunbury)	25	1730
"Berea" sand—oil and gas	25	1755
Black slate	10	1765
Hard gray sand	5	1770
Lime	5	1775
Gray sand	10	1785
Lime	3	1788
Black sand	2	1790
Bastard lime	4	1794
Black shale	20	1814
Fine black sand	97	1911
DEVONIAN SYSTEM.		
Black, blue and white shales	574	2485
Bastard lime—stray gas sand	15	2500

SILURIAN SYSTEM.		
Shale	250	2750
Gray sand	10	2760
Limestone	10	2770

LOG No. 744.

TOOMEY No. 1.

Oneida, Scott County, Tenn.

Strata	Thickness	Depth
PENNSYLVANIAN SYSTEM.		
Dark sand	20	20
White sand	180	200
Slate and thin coal	30	230
White sand	80	310
Slate	40	350
White sand	70	420
Slate	130	550
White sand	60	610
MISSISSIPPIAN SYSTEM.		
Red slate (Pennington)	140	750
Gray lime	195	945
Sandy lime—oil	20	965
Gray and brown limes—oil at 970	331	1296
Blue shale	10	1306
Gray sandy lime	71	1377
Pinkish crystalline lime	19	1396
Gray lime with dark oil bearing specks	2	1398
Hard lime	20	1418
White lime	12	1430
Brown lime	45	1475
DEVONIAN SYSTEM.		
Black shale (Chattanooga)	65	1540
Blue slate	15	1555
Blue lime with layers of slate	45	1600
Blue lime	100	1700

Logs 745-749, inclusive, appear on pages 428-431.
Logs 750-752 inclusive, appear on pages 331-335.
Total number of logs in this volume is 752.

CHAPTER IX.

PRECISE LEVEL NET ADJUSTMENT AND STANDARD ELEVATIONS IN KENTUCKY.*

Place	Designation of bench mark	Standard elevation	
		Meters	Feet
Louisville, Ky.	U. S. E. B. M. No. 10(=602B)	127.146	417.145
Louisville, Ky.	U. S. E. B. M. 603	126.777	415.935
Louisville, Ky.	U. S. E. B. M. 604M	131.175	430.363
Louisville, Ky.	P. B. M. 604	130.941	429.595
Louisville, Ky.	Guard Pier	135.464	444.435
Louisville, Ky.	P. B. M. 604A	121.469	398.520
Louisville, Ky.	P. B. M. 605	122.781	402.824
Louisville, Ky.	P. M. B. 606	124.211	407.514
Louisville, Ky.	P. B. M. 607	124.320	407.872
Louisville, Ky.	P B. M. 607A	122.748	402.716
Louisville, Ky.	P. B. M. 608	126.778	415.938
Louisville, Ky.	P. B. M. 609	123.388	404.814
Near Louisville, Ky.	P B. M. 610	122.379	401.504
Near Louisville, Ky.	P. B. M. 611	126.377	414.622
Near Louisville, Ky.	P. B. M. 612	123.574	405.425
Near Louisville, Ky.	P. B. M. 613	124.723	409.195
In Kentucky, near Bridgeport, Ind.	P. B. M. 614	124.929	409.872
In Kentucky, near Bridgeport, Ind.	P. B. M. 614A	129.971	426.412
Near Greenwood Landing, Ky.	P. B. M. 615	123.451	405.022
Greenwood Landing, Ky.	P. B. M. 616	126.361	414.569
In Kentucky, near Stewarts Landing, Ind.	P B. M. 617	126.839	416.138
Near Valley Station, Ky.	P. B. M. 618	126.720	415.748
Near Johnsontown, Ky.	P. B. M. 619	125.736	412.518
Near Bethany, Ky.	P B. M. 620	120.728	396.087
Near Kosmosdale, Ky.	P. B. M. 621	126.641	415.489
Near Kosmosdale, Ky.	P. B. M. 622	123.246	404.348
Near Kosmosdale, Ky.	P B. M. 623	123.990	406.791
Kosmosdale,. Ky.	P. B. M. 623A	130.269	427.390
Kosmosdale, Ky.	P. B. M. 624	126.189	414.004
Near Kosmosdale, Ky.	P. B. M. 625	125.582	412.014
Near West Point, Ky.	P. B. M. 626	121.060	397.178
West Point, Ky.	U. S. G. S. 441	134.342	440.753

* U. S. Coast and Geodetic Survey, Special Publication No. 18, By Bowie and Avers. 1914.

Place	Designation of bench mark	Standard elevation	
		Meters	Feet
West Point, Ky.	P. B. M. 627	130.283	427.436
Near West Point, Ky.	P B. M. 628	125.020	410.171
Wabash Island, Ky.	P. B. M 53, bolt	105.092	344.789
	Cap	106.322	348.825
In Kentucky, near mouth of Wabash	P. B. M. 54, bolt	113.299	371.715
	Cap	114.517	375.711
Blackburn, Ky., opp. Shawneetown, Ill.	P. B. M. Kentucky	105.925	347.522
In Kentucky, opposite Dear Creek, Ind.	P. B. M. 715	120.039	393.829
In Kentucky, opposite Dear Creek, Ind.	P. B. M. 715A	120.208	394.381
Near Landis Landing, Ky.	P B. M. 716	119.380	391.665
Near Hawesville, Ky.	P. B. M. 717	118.391	388.421
Near Hawesville, Ky.	P. B. M. 717A	119.004	390.432
Near Hawesville, Ky.	P B. M. 718	117.553	385.671
Near Hawesville, Ky.	P. B. M. 719	114.712	376.350
Hawesville, Ky.	P. B. M. 720	114.642	376.122
Hawesville, Ky.	P B. M. 720A	119.037	390.539
Hawesville, Ky.	U. S. G. S. 422	127.973	419.857
Near Hawesville, Ky.	P. B. M. 721	115.308	378.307
Near Hawesville, Ky.	P. B. M. 722	115.957	380.437
Near Hawesville, Ky.	P. B. M. 723	115.945	380.397
Beachams Landing, Ky.	P. B. M. 724	113.934	373.799
In Hancock County, Ky., above Troy, Ind.	P. B. M. 725	115.609	379.295
In Hancock County, Ky., above Troy, Ind.	P. B. M. 726	121.209	397.667
In Hancock County, Ky., below Troy, Ind.	P. B. M. 727	119.140	390.878
In Hancock County, Ky., below Troy, Ind.	P. B. M. 728	115.602	379.271
In Hancock County, Ky., below Troy, Ind.	P B. M. 728A	116.979	383.788
Near Lewisport, Ky.	P. B. M. 729	115.718	379.651
Near Lewisport, Ky.	P. B. M. 730	114.333	375.108
Near Lewisport, Ky.	P. B. M. 731	113.833	373.468
Near Lewisport, Ky.	P. B. M. 732	116.375	381.807
Near Lewisport, Ky.	P. B. M. 733	114.650	376.148
Lewisport, Ky.	P. B. M. 733A	121.504	398.634
Lewisport, Ky.	P. B. M. 734	113.241	371.525
Near Lewisport, Ky.	P. B. M. 735	118.823	389.838
Near Lewisport, Ky.	P. B. M. 736	120.972	396.889
Near Lewisport, Ky.	P. B. M. 737	117.805	386.500
In Kentucky, opposite Grand View, Ind.	P. B. M. 738	112.479	369.024
In Kentucky, opposite Grand View, Ind.	P. B. M. 739	112.103	367.791
In Kentucky, near Rockport, Ind.	P. B. M. 740	112.764	369.960

Place	Designation of bench mark	Standard elevation	
		Meters	Feet
In Kentucky, near Rockport, Ind.	P. B. M. 741	117.190	384.480
In Kentucky, near Rockport, Ind.	P. B. M. 742	117.114	384.233
In Kentucky, near Rockport, Ind.	P. B. M. 743	114.389	375.291
Iceland Landing, Ky.	P .B. M. 744	113.298	371.713
Near Mouth of Puppy Creek, Ky.	P. B. M. 745	115.804	379.933
Puppy Creek, Ky.	P. B. M. 746	113.330	371.818
Near Owensboro, Ky.	P. B. M. 747	112.574	369.336
Near Owensboro, Ky.	P. B. M. 749	113.079	370.994
Near Owensboro, Ky.	P B. M. 750	107.957	354.190
Near Owensboro, Ky.	P. B. M. 751	120.582	395.609
Owensboro, Ky.	P. B. M. 752	109.424	359.003
Owensboro, Ky.	U. S. G. S. 396	120.287	394.642
Owensboro, Ky.	High Water 1884	118.234	387.906
Owensboro, Ky.	Water gauge	103.384	339.187
Near Owensboro, Ky.	P. B. M. 753	108.202	354.992
Near Owensboro, Ky.	P. B. M. 754	108.923	357.357
Near Owensboro, Ky.	P. B. M. 755	115.570	379.165
Near Little Hurricane Island, Ky.	P B. M. 756	112.719	369.813
Near Little Hurricane Island, Ky.	P. B. M. 757	113.915	373.736
Near Little Hurricane Island, Ky.	P. B. M. 758	114.573	375.896
Near Little Hurricane Island, Ky.	P. B. M. 759	110.678	363.117
Near French Island, Ky.	P. B. M. 760	109.144	358.083
Near French Island, Ky.	P. B. M. 761	113.657	372.889
Near French Island, Ky.	P. B. M. 762	113.431	372,148
Near French Island, Ky.	P. B. M. 763	113.811	373.394
Near French Island, Ky.	P. B. M. 764	113.392	372.019
Near French Island, Ky.	P. B. M. 765	112.039	367.581
Near French Island, Ky.	P. B. M. 766	108.314	355.361
Near Carlinburg, Ky.	P. B. M. 767	108.624	356.377
Near Scuffletown, Ky.	P. B. M. 768	107.373	352.274
Near Scuffletown, Ky.	P. B. M. 769	108.010	354.364
Near Scuffletown, Ky.	P. B. M. 771	113.292	371.692
Near Scuffletown, Ky.	P. B. M. 773	109.386	358.878
Near Mouth of Green River, Ky.	P. B. M. 777	109.802	360.241
Near Mouth of Green River, Ky.	P. B. M. 778	109.161	358.138
Near Mouth of Green River, Ky.	P. B. M. 779	108.000	354.331
In Kentucky, near Evansville, Ind.	P. B. M. 780	109.432	359.028
In Kentucky, near Evansville, Ind.	P B. M. 781	111.968	367.349
In Kentucky, near Evansville, Ind.	P. B. M. 782	107.319	352.095

Place	Designation of bench mark	Standard elevation Meters	Feet
In Kentucky, near Evansville, Ind.	P. B. M. 783	111.573	366.053
In Kentucky, near Evansville, Ind.	P B. M. 784	112.048	367.611
In Kentucky, near Evansville, Ind.	P. B. M. 785	112.502	369.101
In Kentucky, near Evansville, Ind.	P. B. M. 786	111.739	366.596
In Kentucky, near Evansville, Ind.	P B. M. 787	109.326	358.681
In Kentucky, near Evansville, Ind.	P. B. M. 788	110.237	361.670
In Kentucky, near Evansville, Ind.	P. B. M. 789	111.714	366.515
In Kentucky, near Evansville, Ind.	P. B. M. 790	107.434	352.474
Evansville, Ind.	High water	114.834	376.751
	marks	114.905	376.983
Evansville, Ind.	U. S. G. S. 394	120.154	394.206
Dutch Bend, Ky.	P. B. M. 791	110.698	363.181
Dutch Bend, Ky.	P. B. M. 792	108.842	357.092
Near Henderson, Ky.	P. B. M. 793	107.048	351.206
Near Henderson, Ky.	P. B. M. 794	106.888	350.683
Near Berry Ferry, Ky.	P. B. M. 888	98.220	322.243
Near Berry Ferry, Ky.	P. B. M. 889	97.524	319.959
Near Berry Ferry, Ky.	P B. M. 890	98.497	323.153
Near Berry Ferry, Ky.	P. B. M. 891	101.779	333.920
Near Berry Ferry, Ky.	P. B. M. 892	96.240	315.747
Golconda, Ill.	High Water 1883	106.451	349.249
Golconda, Ill.	High Water 1884	106.899	350.719
Near Berry Ferry, Ky.	P. B. M. 893	97.695	320.522
Near Berry Ferry, Ky.	P. B. M. 894	101.262	332.225
Near Pryors Island, Ky.	P. B. M. 895	97.821	320.934
Near Bayou, Ky.	P. B. M. 896	100.887	330.993
Near Bayou, Ky.	P. B. M. 897	99.678	327.027
Near Bayou, Ky.	P. B. M. 898	96.865	317.799
Near Bayou, Ky.	P. B. M. 899	102.065	334.857
Near Bayou, Ky.	P. B. M. 900	97.109	318.597
Bayou, Ky	P B. M. 901	99.459	326.308
Near Birdsville, Ky.	P. B. M. 902	104.650	343.339
Birdsville, Ky.	P. B. M. 903	101.234	332.133
Birdsville, Ky.	P. B. M. 903A	102.335	335.743
Near Birdsville, Ky.	P. B. M. 904	96.587	316.886
Near Birdsville, Ky.	P. B. M. 905	95.327	312.753
Near Smithland, Ky.	P. B. M. 906	98.835	324.261
Near Smithland, Ky.	P. B. M. 907	99.684	327.047

Place	Designation of bench mark	Standard elevation	
		Meters	Feet
Near Smithland, Ky.	P B. M. 908	97.761	320.736
Smithland, Ky.	P. B. M. 909	98.965	324.689
Smithland, Ky.	P. B. M. 909A	103.299	338.678
Near Smithland, Ky.	P. B. M. 910	97.159	318.763
Near Smithland, Ky.	P. B. M. 911	99.514	326.488
Near Smithland, Ky.	P. B. M. 913	95.992	314.934
Near Ledbetter, Ky.	P B. M. 914	95.990	314.928
Near Ledbetter, Ky.	P. B. M. 915	98.544	323.307
Near Ledbetter, Ky.	P. B. M. 916	100.144	328.555
Near Ledbetter, Ky.	P. B. M. 917	94.793	311.001
Near Paducah, Ky.	P. B. M. 918	93.934	308.181
Near Paducah, Ky.	P. B. M. 919	99.352	325.957
Near Paducah, Ky.	P. B. M. 920	98.819	324.208
Near Paducah, Ky.	P B. M. 921	93.433	306.538
Near Paducah, Ky.	P. B. M. 922	98.750	323.982
Paducah, Ky.	P. B. M. 923	99.530	326.542
Paducah, Ky.	P. B. M. 923A	91.533	300.303
Paducah, Ky.	P. B. M. 924	93.523	306.834
Near Paducah, Ky.	P. B. M. 925	95.029	311.774
Near Paducah, Ky.	P. B. M. 926	93.977	308.324
Near Paducah, Ky.	P. B. M. 927	94.359	309.577
In Kentucky, near Metropolis, Ill.	P. B. M. 929	93.050	305.283
In Kentucky, near Metropolis, Ill.	P B. M. 930	95.291	312.634
In Kentucky, near Metropolis, Ill.	P. B. M. 931	93.021	305.185
In Kentucky, near Metropolis, Ill.	P. B. M. 932	94.409	309.741
In Kentucky, near Metropolis, Ill.	P. B. M. 933	94.424	309.788
In Kentucky, near Metropolis, Ill.	P. B. M. 934	94.596	310.355
In Kentucky, near Metropolis, Ill.	P B. M. 935	93.685	307.365
Near Ragland, Ky.	P. B. M. 936	94.481	309.976
Near Ragland, Ky.	P. B. M. 937	93.314	306.147
Near Ragland, Ky.	P B. M. 938	94.493	310.017
Near Ragland, Ky.	P. B. M. 939	98.003	321.531
Near Ragland, Ky.	P. B. M. 940	96.749	317.417
Near Ragland, Ky.	P B. M. 941	92.593	303.783
Near Ogden, Ky.	P. B. M. 942	96.611	316.964
Near Ogden, Ky.	P. B. M. 943	97.239	319.024
Near Ogden, Ky.	P. B. M. 944	95.151	312.174
Near Ogden, Ky.	P B. M. 945	96.606	316.948
In Kentucky, near Grand Chain, Ill.	P. B. M. 947	97.773	320.778
In Kentucky, near Grand Chain, Ill.	P. B. M. 948	96.732	317.362

Place	Designation of bench mark	Standard elevation	
		Meters	Feet
In Kentucky, near Grand Chain, Ill.	P. B. M. 949	93.370	306.331
In Kentucky, near Grand Chain, Ill.	P. B. M. 950	94.051	308.566
In Kentucky, near Caledonia, Ill.	P. B. M. 951	94.494	310.020
In Kentucky, near Caledonia, Ill.	P. B. M. 952	92.595	303.788
In Kentucky, near Caledonia, Ill.	P. B. M. 953	96.163	315.494
In Kentucky, near Caledonia, Ill.	P. B. M. 954	94.433	309.820
Near Humphries Creek, Ky.	P. B. M. 955	93.858	307.933
Near Humphries Creek, Ky.	P. B. M. 956	92.320	302.887
Near Holloway, Ky.	P. B. M. 957	91.958	301.700
Near Holloway, Ky.	P. B. M. 958	97.286	319.178
Near Holloway, Ky.	P. B. M. 959	96.864	317.794
Near Holloway, Ky.	P. B. M. 960	97.190	318.865
Holloway, Ky.	P. B. M. 961	97.320	319.292
Near Holloway, Ky.	P. B. M. 962	96.269	315.841
Near Holloway, Ky.	P. B. M. 963	94.850	311.186
Near East Cairo, Ky.	P. B. M. 964	96.267	315.836
Near East Cairo, Ky.	P. B. M. 965	95.153	312.180
Near East Cairo, Ky.	. B. M. 966	94.296	309.369
Near East Cairo, Ky.	P. B. M. 967	93.663	307.293
Near East Cairo, Ky.	P. B. M. 968	93.647	307.241
High Bridge, Ky.	J_1	232.834	763.890
Near High Bridge, Ky	K_1	234.686	769.966
Between High Bridge and Burgin, Ky.	L_1	264.987	869.378
Burgin, Ky.	M_1	274.677	901.169
Burgin, Ky.	N_1	273.508	897.334
Faulconer, Ky.	O_1	271.216	889.814
Near Danville, Ky.	P_1	280.872	921.494
Danville, Ky.	Q_1	301.285	988.466
Near Junction City, Ky.	R_1	313.322	1027.957
Near Junction City, Ky.	S_1	289.539	949.929
Near Moreland, Ky.	T_1	303.053	994.266
Moreland, Ky.	U_1	333.488	1094.119
Near Moreland, Ky.	V_1	292.084	958.279
McKinney, Ky.	W_1	308.271	1011.386
Near McKinney Ky	X_1	278.428	913.476
Near Kings Mountain, Ky.*	Y_1	305.038	1000.779
Kings Mountain, Ky.	Z_1	353.306	1159.138
Waynesburg, Ky.	A_2	369.514	1212.314
Eubank, Ky.	B_2	356.137	1168.426
Floyd, Ky.	C_2	340.398	1116.789

Place	Designation of bench mark	Standard elevation	
		Meters	Feet
Near Pulaski, Ky.	D_2	340.566	1117.340
Science Hill, Ky.	E_2	342.904	1125.011
Norwood, Ky.	F_2	326.951	1072.672
Near Somerset, Ky.	G_2	292.241	958.794
Somerset, Ky.	A_3	262.024	859.657
Somerset, Ky.	B_3	268.005	879.280
Somerset, Ky.	C_3	272.108	892.741
Somerset, Ky.	D_3	268.363	880.454
Near Burnside, Ky.	E_3	249.177	817.508
Burnside, Ky.	F_3	235.332	772.085
Near Sloans Valley, Ky.	G_3	280.439	920.074
Alpine, Ky.	H_3	290.058	951.632
Greenwood, Ky.	I_3	363.515	1192.632
Flat Rock, Ky.	J_3	393.551	1291.175
Whitley, Ky.	K_3	401.546	1317.406
Pine Knot, Ky.	L_3	430.209	1411.444
Between Strunk, Ky., and Isham, Tenn.	M_3	415.308	1362.556
Fulton, Ky.	No. XI	109.864	360.445
Alexander, Ky.	No. X	112.931	370.508
Clinton, Ky.	No. IX	119.275	391.321
Arlington, Ky.	No. VIII	111.427	365.573
Bardwell, Ky.	No. VII	119.732	392.821
Near Bardwell, Ky.	No. VI	97.417	319.609
Fort Jefferson, Ky.	No. V	98.668	323.713
Wickliffe, Ky.	No. IV	101.983	334.589
East Cairo, Ky.	No. III	99.053	324.976
Newport, Ky.	A	156.192	512.440
Newport, Ky.	U. S. E.	152.534	500.439
Covington, Ky.	B	156.548	513.608
Ludlow, Ky.	C	162.134	531.935
Crescent Springs, Ky.	D	237.475	779.116
Erlanger, Ky.	E	279.016	915.405
Dixon, Ky.	F	282.004	925.208
Richwood, Ky.	G	286.150	938.810
Walton, Ky.	H	278.533	913.820
Near Crittenden, Ky.	I	273.038	895.792
Crittenden, Ky.	J	281.565	923.768
Sherman, Ky.	K	284.890	934.677
Dry Ridge, Ky.	L	292.011	958.039
Williamstown, Ky.	M	297 064	974.617

Place	Designation of bench mark	Standard elevation Meters	Feet
Mason, Ky.	N	278.908	915.051
Blanchett, Ky.	O	286.971	941.504
Corinth, Ky.	P	292.271	958.892
Hinton Ky.	Q	290.606	953.430
Sadieville, Ky.	R	261.700	858.594
Near Sadieville, Ky.	S	263.843	865.625
Rogers Gap, Ky.	T	275.398	903.535
Near Kinkaid, Ky.	U	255.070	836.842
Near Georgetown, Ky.	V	260.848	855.799
Georgetown, Ky.	W	267.325	877.049
Near Donerail, Ky.	X	265.403	870.743
Greendale, Ky.	Y	285.248	935.851
Hillenmeyer, Ky.	Z	286.354	839.480
Lexington, Ky.	A_1	298.568	979.552
Near Lexington, Ky.	B_1	308.166	1011.041
Brannon, Ky.	C_1	313.527	1028.630
Near Brannon, Ky.	D_1	297.197	975.054
Nicholasville, Ky.	E_1	289.917	951.169
Nicholasville, Ky.	F_1	288.655	947.029
Jessamine, Ky.	G_1	269.934	885.608
Wilmore, Ky.	H_1	267.670	878.181
Near High Bridge, Ky.	I_1	273.423	897.055
In Kentucky, near Evans Landing, Ind.	P. B. M. 629	121.827	399.695
In Kentucky, near Browns Landing, Ind.	P. B. M. 630	120.287	394.642
In Kentucky, near Browns Landing, Ind	P. B. M. 631	120.856	396.510
In Kentucky, near Mosquito Creek, Ind.	P. B. M. 632	124.593	408.770
Near Rock Haven, Ky.	P. B. M. 633	123.838	406.292
Near Rock Haven, Ky.	P. B. M. 634	124.860	409.644
Rock Haven, Ky.	P. B. M. 635	119.305	391.419
Rock Haven, Ky.	P B. M. 635A	115.696	379.579
Near Rock Haven, Ky.	P. B. M. 636	121.990	400.230
Near Dittoes Landing, Ky.	P. B. M. 637	125.177	410.684
Near Dittoes Landing, Ky.	P. B. M. 638	120.508	395.366
In Kentucky, near Tobacco Landing, Ind.	P. M. G. 639	121.978	400.188
Near Brandenburg, Ky.	P. B. M. 640	122.153	400.765
Near Brandenburg, Ky.	P. B. M. 641	127.458	418.169
Near Brandenburg, Ky.	P. B. M. 642	119.835	393.159
Brandenburg, Ky.	P. B. M. 643	135.920	445.931
Brandenburg, Ky.	P. B. M. 643A	137.521	451.183
Near Brandenburg, Ky.	P. B. M. 644	121.503	398.630

Place	Designation of bench mark	Standard elevation	
		Meters	Feet
In Kentucky, near Mauckport, Ind.	P. B. M. 645	120.370	394.915
In Kentucky, near Mauckport, Ind.	P. B. M. 646	122.881	403.153
In Kentucky, near Mauckport, Ind.	P. B. M. 647	124.721	409.188
In Kentucky, near Mauckport, Ind.	P. B. M. 648	120.134	394.140
In Kentucky, near Mauckport, Ind.	P. B. M. 651	126.042	413.522
Near Crecelius, Ky.	P B. M. 654	121.625	399.032
Near Crecelius, Ky.	P. B. M. 655	127.466	418.195
Near Crecelius, Ky.	P. B. M. 656	121.201	397.640
Near Crecelius, Ky.	P. B. M. 657	119.027	390.509
Near Peckenpaugh, Ky.	P. B. M. 658	120.739	396.125
In Kentucky, near Leavenworth, Ind.	P. B. M. 660	129.243	424.025
In Kentucky, near Leavenworth, Ind.	P. B. M. 661	127.868	419.513
Leavenworth, Ind.	P. B. M. 661A	128.076	420.197
Leavenworth, Ind.	High Water 1883	130.553	428.324
Leavenworth, Ind.	High Water 1884	131.011	429.824
In Kentucky, near Leavenworth, Ind.	P. B. M. 662	120.457	395.199
In Kentucky, near Leavenworth, Ind.	P. B. M. 663	122.125	400.673
Near Crecelius, Ky.	P. B. M. 664	121.106	397.329
Near Crecelius, Ky.	P. B. M. 665	121.056	397.166
Crecelius, Ky.	P. B. M. 666	120.227	394.446
Near Crecelius, Ky.	P. B. M. 667	112.737	369.872
Near Crecelius, Ky.	P. B. M. 668	118.766	389.652
Near Cedar Branch, Ky.	P. B. M. 669	116.765	383.086
Near Cedar Branch, Ky.	P. B. M. 670	117.221	384.581
Near Wolfe Creek, Ky.	P. B. M. 671	117.883	386.754
Near Wolfe Creek, Ky.	P. B. M. 672	117.834	386.595
Near Wolfe Creek, Ky.	P. B. M. 673	117.635	385.941
Near Wolfe Creek, Ky.	P. B. M. 674	119.320	391.469
In Kentucky, near Alton, Ind.	P. B. M. 678	120.024	393.779
Near Concordia, Ky.	P. B. M. 679	121.957	400.122
Near Concordia, Ky.	P. B. M. 680	124.616	408.843
Near Concordia, Ky.	P. B. M. 681	119.001	390.422
Near Concordia, Ky.	P. B. M. 682	116.652	382.716
Concordia, Ky.	P. B. M. 683	123.852	406.338
Near Concordia, Ky.	P. B. M. 684	117.469	385.397
Near Concordia, Ky.	P. B. M. 685	116.875	383.447
Flint Island, Ky.	P. B. M. 686	117.191	384.485
Flint Island, Ky.	P. B. M. 687	117.636	385.943

Place	Designation of bench mark	Standard elevation Meters	Standard elevation Feet
Flint Island, Ky.	P. B. M. 687A	112.897	370.395
Burchs Landing, Ky.	P. B. M. 688	117.315	384.890
Near Chenault, Ky.	P. B. M. 689	119.586	392.342
Chenault, Ky.	P. B. M. 690	122.360	401.443
Near Chenault, Ky.	P. B. M. 691	118.898	390.084
Near Lahant, Ky.	P. B. M. 692	115.828	380.912
Near Lahant, Ky.	P. B. M. 693	117.627	385.913
Near Ammos, Ky.	P. B. M. 694	115.823	379.996
Near Ammos, Ky.	P. B. M. 695	116.541	382.352
Near Stephensport, Ky.	P. B. M. 696	120.210	394.389
Near Stephensport, Ky.	P. B. M. 697	126.573	415.264
Stephensport, Ky.	P. B. M. 697A	116.897	383.519
Near Stephensport, Ky.	P. B. M. 698	117.420	385.234
Near Addison, Ky.	P. B. M. 699	116.174	381.148
Near Addison, Ky.	P. B. M. 700	120.770	396.225
Holt, Ky.	P. B. M. 701	121.792	399.580
Near Holt, Ky.	P. B. M. 702	118.685	389.386
Near Holt, Ky.	P. B. M. 703	116.753	383.048
Near Cloverport, Ky.	P. B. M. 704	118.261	387.996
Near Cloverport, Ky.	P. B. M. 705	115.111	377.659
Near Cloverport, Ky.	P. B. M. 706	116.562	382.422
Cloverport, Ky.	P. B. M. 707	115.750	379.755
Cloverport, Ky.	P. B. M. 707A	125.825	412.812
Cloverport, Ky.	High Water 1884	126.991	416.637
Cloverport, Ky.	P. B. M. 708	126.747	415.835
Near Cloverport, Ky.	P. B. M. 709	116.519	382.279
Near Cloverport, Ky.	P. B. M. 710	120.493	395.317
Near Skillman, Ky.	P. B. M. 711	121.441	398.428
Near Skillman, Ky.	P. B. M. 712	118.816	389.814
Near Skillman, Ky.	P. B. M. 713	116.307	381.583
Near Skillman, Ky.	P. B. M. 714	114.621	376.051
Near Henderson, Ky.	P. B. M. 795	107.614	353.065
Near Henderson, Ky.	P. B. M. 796	109.914	360.610
Near Henderson, Ky.	P. B. M. 797	107.401	352.364
Henderson, Ky.	Ref. Point	103.306	338.929
Henderson, Ky.	Old B. M.	103.200	338.581
Henderson, Ky.	High Water. 1884	115.025	377.378
Henderson, Ky.	P. B. M. 797A	114.752	376.483

Place	Designation of bench mark	Standard elevation	
		Meters	Feet
Henderson, Ky.	P. B. M. 798	118.177	387.718
Near Henderson, Ky.	P. B. M. 799	107.692	353.319
Near Henderson, Ky.	P. B. M. 800	108.433	355.752
Near Henderson, Ky.	P. B. M. 801	110.839	363.644
Near Henderson, Ky.	P. B. M. 802	110.604	362.872
Near McDonalds Landing, Ky.	P. B. M. 803	117.042	383.995
Near McDonalds Lanling, Ky.	P. B. M. 805	112.466	368.983
Near McDonalds Landing, Ky.	P. B. M. 806	110.516	362.585
Near Cypress Bend, Ky.	P. B. M. 807	110.422	362.276
Near Cypress Bend, Ky.	P. B. M. 808	107.390	352.329
Cypress Bend, Ky.	P. B. M. 809	106.227	348.514
In Kentucky, near West Franklin, Ind.	P. B. M. 810	106.544	349.552
In Kentucky, near West Franklin, Ind.	P. B. M. 811	105.670	346.685
Near Diamond Island, Ky.	P. B. M. 812	106.236	348.543
Near Diamond Island, Ky.	P. B. M. 813	109.017	357.668
Near Diamond Island, Ky.	P. B. M. 815	108.411	355.678
Near Diamond Island, Ky.	P. B. M. 816	109.431	359.025
Near Alzey, Ky.	P. B. M. 817	104.220	341.927
Near Alzey, Ky.	P. B. M. 818	108.192	354.959
In Kentucky, near Mount Vernon, Ind.	P. B. M. 819	109.429	359.019
In Kentucky, near Mount Vernon, Ind.	P. B. M. 820	108.807	356.978
In Kentucky, near Mount Vernon, Ind.	P. B. M. 821	109.657	359.765
In Kentucky, near Mount Vernon, Ind.	P. B. M. 822	106.169	348.323
In Kentucky, near Mount Vernon, Ind.	P. B. M. 823	105.193	345.121
In Kentucky, near Mount Vernon, Ind.	P. B. M. 824	105.592	346.429
Near Slim Island, Ky.	P. B. M. 825	103.565	339.780
Near Slim Island, Ky.	P. B. M. 826	108.682	356.568
Near Slim Island, Ky.	P. B. M. 827	107.588	352.979
Near Slim Island, Ky.	P. B. M. 828	105.038	344.612
Near Slim Island, Ky.	P. B. M. 829	107.140	351.508
Near Slim Island, Ky.	P. B. M. 830	104.416	342.570
Near Uniontown, Ky.	P. B. M. 831	104.256	342.048
Near Uniontown, Ky.	P. B. M. 833	107.847	353.828
Near Uniontown, Ky.	P. B. M. 834	105.735	346.900
Near Uniontown, Ky.	P. B. M. 835	101.941	334.451
Near Uniontown, Ky.	P. B. M. 836	105.096	344.802
Near Uniontown, Ky.	P. B. M. 837	104.966	344.375
Near Wabash Island, Ky.	P. B. M. 838	104.847	343.987
Near Wabash Island, Ky.	P. B. M. 839	103.583	339.839
Near Wabash Island, Ky.	P. B. M. 840	102.867	337.490

Place	Designation of bench mark	Standard elevation	
		Meters	Feet
Near Wabash Island, Ky.	P. B. M. 841	103.228	338.675
Near Wabash Island, Ky.	P. B. M. 842	103.082	338.195
Near Wabash Island, Ky.	P. B. M. 843	100.911	331.072
Near Raleigh, Ky.	P. B. M. 844	107.661	353.219
Raleigh, Ky.	P. B. M. 845	106.790	350.361
Near Browns Island, Ky.	P. B. M. 846	106.866	350.609
Near Browns Island, Ky.	P. B. M. 847	106.559	349.601
In Kentucky, near Shawneetown, Ill	P. B. M. 848	105.159	345.009
In Kentucky, near Shawneetown, Ill	P. B. M. 849	101.276	332.271
In Kentucky, near Shawneetown, Ill	P. B. M. 850	105.349	345.631
In Kentucky, near Shawneetown, Ill	P. B. M. 851	105.079	344.746
In Kentucky, near Shawneetown, Ill	P. B. M. 852	101.605	333.348
Near Cincinnati Towhead, Ky.	P. B. M. 853	101.755	333.842
Near Cincinnati, Towhead, Ky	P. B. M. 854	99.695	327.082
Near Cincinnati, Towhead, Ky	P. B. M. 855	103.866	340.768
Near Dekoven, Ky.	P. B. M. 856	103.250	338.746
Near Dekoven, Ky.	P. B. M. 857	101.019	331.426
Near Dekoven, Ky.	P. B. M. 858	98.939	324.602
Near Dekoven, Ky.	P. B. M. 859	101.888	334.279
Near Dekoven, Ky.	P. B. M. 860	101.035	331.479
Near Dekoven, Ky.	P. B. M. 860A	103.690	340.189
Near Caseyville, Ky.	P. B. M. 862	103.912	340.917
Near Caseyville, Ky.	P. B. M. 863	102.635	336.728
Near Caseyville, Ky.	P. B. M. 864	104.208	341.888
Near Weston, Ky.	P. B. M. 865	100.787	330.665
Near Weston, Ky.	P. B. M. 866	105.315	345.520
Near Fords Ferry, Ky.	P. B. M. 867	104.744	343.649
Fords Ferry, Ky.	P. B. M. 868	99.630	326.868
In Kentucky, near Cave-in-Rock, Ill	P. B. M. 869	102.833	337.379
In Kentucky, near Cave-in-Rock, Ill	P. B. M. 870	103.376	339.160
In Kentucky, near Cave-in-Rock, Ill	P. B. M. 871	99.908	237.781
Near Tolu, Ky.	P. B. M. 872	100.728	330.472
Near Tolu, Ky.	P. B. M. 873	102.883	337.541
Near Tolu, Ky.	P. B. M. 874	102.721	337.009
Near Tolu, Ky.	P. B. M. 875	97.839	320.992
Tolu, Ky.	P. B. M. 876	103.211	338.618
Near Carrsville, Ky.	P. B. M. 880	99.903	327.764
Near Carrsville, Ky.	P. B. M. 881	99.190	325.427
Near Carrsville, Ky.	P. B. M. 882	98.507	323.184
Near Carrsville, Ky.	P. B. M. 883	101.711	333.698

Place	Designation of bench mark	Standard elevation	
		Meters	Feet
Near Carrsville, Ky.	P. B. M. 884	104.308	342.217
Near Carrsville, Ky.	P. B. M. 885	96.623	317.003
Near Carrsville, Ky.	P. B. M. 886	103.654	340.070
Near Carrsville, Ky.	P. B. M. 887	96.969	318.140
Fort Jefferson, Ky.	P. B. M. 6	97.941	321.328
Columbus, Ky.	P. B. M. 7	96.055	315.140
Columbus, Ky.	P. B. M. 8	93.846	307.893
Columbus, Ky.	P. B. M. 9	94.384	309.658
Columbus, Ky.	P. B. M. 10	137.861	452.299
Near Worshams Landing, Ky.	P. B. M. 11	93.486	306.712
Near Worshams Landing, Ky.	P. B. M. 12	92.330	302.919
Near Hickman, Ky.	P. B. M. 13	91.895	301.492
Hickman, Ky.	P. B. M. 14	109.797	360.226
Hickman, Ky.	P. B. M. 15	94.502	310.045
Near Hickman, Ky.	P. B. M. 16	91.740	300.984
Louisville, Ky.	R. R. Bridge	136.481	447.771
Georgetown, Ky.	U. S. G. S. 866	263.818	865.543
Near Georgetown, Ky.	U. S. G. S. 798	243.142	797.709
Duvall, Ky.	U. S. G. S. 840	256.152	840.392
Stamping Ground, Ky.	U. S. G. S. 802	244.555	802.344
Near Stamping Ground, Ky.	U. S. G. S. 714	217.500	713.581
Switzer, Ky.	U. S. G. S. 732	223.282	732.551
Near Switzer, Ky.	U. S. B. M. 744	226.912	744.460
Elkhorn, Ky.	U. S. G. S. 673	205.199	673.224
Steadmantown, Ky.	U. S. G. S. 714	217.752	714.408
Near Steadmantown, Ky.	U. S. B. M. 675	205.677	674.792
Frankfort, Ky.	U. S. G. S. 511	155.816	511.206
Frankfort, Ky.	U. S. G. S. 512	156.159	512.332
Near Kennebec, Ky.	U. S. G. S. 537	163.665	536.958
Near Kennebec, Ky.	U. S. B. M. 562	171.281	561.945
Near Benson, Ky.	Bridge	182.802	599.743
Near Benson, Ky.	U. S. G. S. 600	182.802	599.743
Hatton, Ky.	U. S. G. S. 714	217.772	714.474
Near Hatton, Ky.	U. S. G. S. 829	252.862	829.598
Near Hatton, Ky.	U. S. G. S. 881	268.415	880.625
Bagdad, Ky.	U. S. G. S. 912	277.959	911.937
Christiansburg, Ky	U. S. G. S. 903	275.357	903.401
Near Christiansburg, Ky.	U. S. B. M. 882	268.819	881.951
Near Christiansburg, Ky.	U. S. G. S. 849	258.901	849.411
Near Christiansburg, Ky.	U. S. G. S. 724	220.664	723.962

Place	Designation of bench mark	Standard elevation	
		Meters	Feet
Shelbyville, Ky.	U. S. G. S. 760	231.560	759.709
Scotts Station, Ky.	U. S. G. S. 750	228.643	750.139
Near Field Station, Ky.	U. S. G. S. 725	220.962	724.939
Simpsonville, Ky.	U. S. G. S. 825	251.395	824.785
Connor, Ky.	U. S. G. S. 701	213.797	701.433
Long Run, Ky.	U. S. G. S. 629	191.841	629.398
Near Eastwood, Ky.	U. S. G. S. 640	195.070	639.992
Near Beckley, Ky.	U. S. G. S. 595	181.424	595.222
Near Beckley, Ky.	U. S. G. S. 634	193.338	634.310
Near Avoca, Ky.	U. S. G. S. 652	198.914	652.603
Anchorage, Ky.	U. S. G. S. 724	220.756	724.264
Lyndon, Ky.	U. S. G. S. 561	171.141	561.485
Near Warwick Villa, Ky.	U. S. G. S. 539	164.282	538.982
St. Mathews, Ky.	U. S. G. S. 550	167.635	549.982
Near St. Matthews, Ky.	U. S. G. S. 548	166.989	547.863
Near St. Matthews, Ky.	U. S. G. S. 553	168.759	553.670
Louisville, Ky.	No. 49	163.958	537.919
Louisville, Ky.	B. M. 86 or No. 16	138.481	454.333
Louisville, Ky.	B. M. 13	138.388	454.028

CHAPTER X.
ELEVATION, ABOVE SEA, OF POINTS IN KENTUCKY.

Compiled from Co-operative Work of the Kentucky Geological Survey and United States Geological Survey and From the Various Railroad and River Surveys

(Complete to Aug. 1, 1919.)

No.	Place	County	Station	Elevation.
1	Adairville	Logan	L. & N. R. R.	589
2	Addison	Breckinridge	L. H. & St. L. R. R.	371
3	Aden	Carter	C. & O. R. R.	626
4	Adolphus	Allen	U. S. G. S.	657
5	Aetnaville, P. O.	Ohio	U. S. B. M.	444
6	Alexander	Fulton	U. S. C. G. S.	368
7	Allen	Floyd	U. S. B. M.	638
8	Allensville	Todd	L. & N. R. R.	554
9	Allen	Boyd	U. S. B. M.	629
10	Almo	Calloway	N. C. & St. L. R. R.	440
11	Alms House	Jefferson	I. C. R. R.	464
12	Alonzo	Floyd	U. S. B. M.	643
13	Alphoretta	Floyd	U. S. B. M.	652
14	Alpine	McCreary	Q. N. C. R. R.	1,006
15	Altamont	Laurel	L. & N. R. R.	1,163
16	Alton	Anderson	S. R. R.	722
17	Alton	Anderson	U. S. B. M.	839
18	Ambrose	Jessamine	U. S. B. M.	851
19	Anchorage	Jefferson	U. S. B. M.	724
20	Anderson	Logan	U. S. B. M.	637
21	Anderson	Todd	E. & G. R. R.	650
22	Anderson Ferry	Boone	L. W. in Ohio River	429
23	Andersonville	Daviess	U. S. B. M.	465
24	Anton	Hopkins	U. S. B. M.	664
25	Apex	Christian	U. S. B. M.	409
26	Argillite	Greenup	E. K. R. R.	524
27	Argillite	Greenup	U. S. B. M.	567
28	Argyle	Powell	L. & E. Station	722
29	Arlington	Carlisle	B. M. near I. C. R. R. Sta.	363
30	Artemus	Knox	L. & N. R. R.	995
31	Ashbyburg	Hopkins	U. S. B. M.	385
32	Ashcamp	Pike	U. S. B. M.	1,084
33	Ashland	Boyd	C. & O. R. R.	552
34	Ashland	Boyd	L. W. in Ohio River	486
35	Askin	Breckinridge	L. H. & St. L. R. R.	613
36	Athens	Fayette	C. & O. R. R.	1,006
37	Athol	Breathitt	L. & E. R. R. Station	744
38	Auburn	Logan	L. & N. R. R.	605
39	Augusta	Bracken	L. W. in Ohio River	444
40	Augusta	Bracken	C. & O. R. R.	505
41	Austerlitz	Bourbon	L. & N. R. R.	918
42	Auxier	Johnson	U. S. B. M. C. & O. Station	630
43	Avenstoke	Anderson	L. S. R. R.	733
44	Avon	Fayette	L. & E. Station	944
45	Bacon Creek	Hart	L. & N. R. R.	621

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
46	Bagdad	Shelby	U. S. B. M. R. R. Station	912
47	Baker	Caldwell	U. S. B. M. R. R. Station	471
48	Bakersport	Hopkins	U. S. B. M.	397
49	Ballard	Anderson	B. M. near P. O.	686
50	Ballard	Floyd	U. S. B. M.	683
51	Bancroft	Muhlenberg	U. S. B. M.	486
52	Bank Lick	Kenton	L. & N. R. R.	829
53	Banner	Floyd	U. S. G. S.	634
54	Barboursville	Knox	L. & N. R. R.	960
55	Bardstown	Nelson	L. & N. R. R.	637
56	Bardstown Jct.	Bullitt	L. & N. R. R.	417
57	Bardwell	Carlisle	B. M. on C. H.	390
58	Barnes	Carroll	L. & N. R. R.	665
59	Barnsley	Hopkins	U. S. B. M.	483
60	Barren Fork	McCreary	Q. & C. R. R.	1,281
61	Barren River	Barren	Lock 1. Top of wall	422
62	Bart	Wayne	Cumberland River	569
63	Bart	Wayne	U. S. B. M. near P. O.	641
64	Baskett	Henderson	U. S. B. M.	397
65	Bath	Knott	U. S. B. M.	1,281
66	Baugh	Logan	L. & N. R. R.	443
67	Beals	Henderson	U. S. B. M.	390
68	Beard's	Oldham	L. & N. R. R.	761
69	Beattyville	Lee	L. W. in Kentucky River	618
70	Beattyville Jct.	Lee	U. S. B. M. L. & E. Station	690
71	Beattyville Jct.	Lee	L. & E. R. R.	713
72	Beaver Creek	Floyd	C. & O. R. R.	651
73	Beaver Dam	Ohio	U. S. B. M.	413
74	Beaver Gap	Knott-Letcher	U. S. B. M.	1,492
75	Beckley	Jefferson	U. S. B. M. L. & N. Station	599
76	Beda	Ohio	U. S. B. M.	546
77	Beddow	Pike	C. & O. R. R.	1,314
78	Bedford	Bourbon	L. & N. R. R.	892
79	Beechgrove	McLean	U. S. B. M.	408
80	Belamy Store	Ohio	U. S. B. M.	440
81	Belcher	Pike	U. S. B. M.	755
82	Belcourt	Webster	U. S. B. M.	397
83	Bellevue	Henry	L. & N. R. R.	875
84	Bell's Mill Ford	Bullitt	U. S. B. M.	423
85	Belmont	Bullitt	L. & N. R. R.	431
86	Belton	Muhlenberg	L. & N. R. R.	409
87	Benson	Franklin	U. S. B. M. R. R. Station	598
88	Benton	Marshall	N. C. & St. L. R. R.	380
89	Berea	Madison	L. & N. R. R.	943
90	Berkley	Carlisle	M. & O. R. R.	355
91	Berry	Harrison	L. & N. R. R.	640
92	Bethany	Jefferson	U. S. B. M.	452
93	Bethlehem	Hardin	I. C. R. R.	732
94	Betsey Layne	Floyd	U. S. B. M.	646
95	Beulah	Hopkins	U. S. B. M.	540
96	Bevier	Muhlenberg	L. & N. R. R.	400
97	Big Clifty	Grayson	I. C. R. R.	682

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
98	Big Sandy Jct.	Boyd	C. & O. R. R.	558
99	Big Sandy River	Boyd	L. W. at mouth	498
100	Big Sandy River	Lawrence	L. W. at mouth of Big Blaine	521
101	Big Sandy River	Lawrence	L. W. at Louisa	526
102	Big Sandy River	Martin	L. W. at mouth of Rockcastle	548
103	Big Sandy River	Martin	L. W. at Richardson	549
104	Big Sandy River	Martin	L. W. at mouth of Paint Cr.	587
105	Big Sandy River	Johnson	L. W. at mouth of Paint Cr.	587
106	Big Sandy River	Floyd	L. W. at mouth of John Cr.	594
107	Big Sandy River	Floyd	L. W. at Prestonsburg	606
108	Big Sandy River	Floyd	L. W. at mouth of Mud Creek	637
109	Big Sandy River	Pike	L. W. at Pikeville	660
110	Big Sandy River	Pike	L. W. at Breaks of Sandy	854
111	Big Spring	Bullitt	L. & N. R. R.	514
112	Birk	Daviess	U. S. B. M.	382
113	Bishop	Jefferson	L. S. R. R.	459
114	Blackburn	Union	U. S. B. M.	348
115	Blackford	Webster	U. S. B. M.	362
116	Blackey	Letcher	L. & E. R. R.	998
117	Blackford	Webster	U. S. B. M.	362
118	Blanchet	Grant	Q. & C. R. R.	953
119	Blandville	Ballard	Weather Bureau	445
120	Bloomfield	Nelson	U. S. B. M.	669
121	Bloomfield	Nelson	L. & N. R. R.	595
122	Blue Cut	Logan	L. & N. R. R.	410
123	Bluff City	Henderson	U. S. B. M.	394
124	Bluff Spring	Christian	U. S. B. M.	573
125	Boaz	Graves	I. C. R. R.	387
126	Bohon	Mercer	U. S. B. M.	894
127	Boldman	Pike	U. S. B. M.	653
128	Bolts Fork	Boyd	U. S. B. M.	653
129	Bonanza	Floyd		640
130	Bonds	McCracken	I. C. R. R.	361
131	Bonita	Woodford	U. S. B. M.	897
132	Bonnieville	Hart	L. & N. R. R.	646
133	Boones Fork	Letcher	U. S. B. M.	1,264
134	Boonesboro	Clark	L. W. in Kentucky River	538
135	Boone's Gap	Madison	L. & N. R. R.	1,130
136	Booneville	Owsley	L. W. in Kentucky River	651
137	Booth's	Hardin	L. & N. R. R.	425
138	Bordley	Union	U. S. B. M.	416
139	Bosco	Floyd	U. S. B. M.	690
140	Boston	Jefferson	U. S. B. M.	615
141	Boston	Nelson	L. & N. R. R.	431
142	Bostonia	Mercer	U. S. B. M.	747
143	Bourne	Garrard	U. S. B. M.	928
144	Bowling Green	Warren	Weather Bureau	469
145	Boxville	Union	U. S. B. M.	443
146	Boyd	Harrison	L. & N. R. R.	674
147	Bracht	Kenton	Q. & C. R. R.	919
148	Bracktown	Fayette	U. S. B. M.	863
149	Bradshaw	Todd	E. & G. R. R.	580

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
150	Brannon	Jessamine	U. S. B. M.	1,041
151	Brandenburg	Meade	L. W. in Ohio River	356
152	Brandenburg Sta.	Meade	L. H. & St. L. R. R.	594
153	Bratcher	Grayson	I. C. R. R.	445
154	Braxton	Mercer	U. S. B. M.	863
155	Breaks of Sandy	Pike	L. W. in Big Sandy River	854
156	Breton	Webster	U. S. B. M.	384
157	Bridge Fork	McCreary	Q. & C. R. R.	1,314
158	Brinkley	Knott	U. S. B. M.	1,178
159	Bristow	Warren	L. & N. R. R.	517
160	Broadhead	Rockcastle	L. & N. R. R.	903
161	Bromley	Owen	U. S. B. M.	489
162	Bronston	Pulaski	Post Office	818
163	Brooks	Bullitt	L. & N. R. R.	490
164	Brashears	Mason	C. & O. R. R.	505
165	Brownsboro	Oldham	L. & N. R. R.	770
166	Brumfield	Boyle	L. & N. R. R.	1,014
167	Brummett	Whitley	L. & N. R. R.	982
168	Brush Creek	Rockcastle	L. & N. R. R.	924
169	Bryan	Jefferson	U. S. B. M.	659
170	Buchanan	Lawrence	C. & O. R. R.	558
171	Buckhorn	Perry	B. M., mouth of Squabble	748
172	Buckner	Oldham	L. & N. R. R.	792
173	Buda	Fulton	I. C. R. R.	428
174	Buechel	Jefferson	U. S. B. M.	500
175	Buel	McLean	U. S. B. M.	446
176	Buena Vista	Lewis	C. & O. R. R.	523
177	Bull Creek	Floyd	U. S. B. M.	634
178	Burdine	Letcher	U. S. B. M.	1,443
179	Burgess	Boyd	U. S. B. M.	565
180	Burgin	Mercer	U. S. B. M.	911
181	Burlington	Boone	U. S. B. M. C. H.	848
182	Burnside	McCreary	L. W. in Cumberland River	589
183	Burnside	McCreary	Q. & C. R. R.	770
184	Bush	Breathitt	L. & E. R. R.	787
185	Butler	Pendleton	L. & N. R. R.	604
186	Butlersville	Allen	U. S. B. M.	543
187	Cadentown	Fayette	C. & O. R. R.	1,035
188	Cadmus	Lawrence	U. S. B. M.	597
189	Cairo	Henderson	U. S. B. M.	465
190	Calhoun	McLean	U. S. B. M.	392
191	California	Campbell	C. & O. R. R.	496
192	Calvary	Marion	L. & N. R. R.	609
193	Calvert	Marshall	I. C. R. R.	443
194	Campbellsburg	Henry	L. & N. R. R.	896
195	Camp Dick Rob'son	Garrard	U. S. B. M.	915
196	Campton Junction	Powell	U. S. B. M. L & E. Station	747
197	Cane Spring	Bullitt	L. & N. R. R.	623
198	Caney	Pike	U. S. B. M.	785
199	Caneyville	Grayson	I. C. R. R.	399
200	Cannonsburg	Boyd	U. S. B. M.	604
201	Carlinburg	Henderson	U. S. B. M.	377
202	Carrollton	Carroll	L. W. in Ohio River	413

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
203	Carrollton	Carroll	L. & N. R. R.	464
204	Carrs	Lewis	C. & O. R. R.	532
205	Carter	Carter	C. & O. R. R.	678
206	Catalpa	Lawrence	U. S. B. M.	563
207	Catlettsburg	Boyd	C. & O. R. R.	552
208	Catlettsburg	Boyd	L. W. in Ohio River	498
209	Catnip Hill	Jessamine	Q. & C. R. R.	975
210	Cave City	Barren	L. & N. R. R.	613
211	Cave Hill	Warren	U. S. B. M.	660
212	Cave Spring	Logan	L. & N. R. R.	588
213	Cayce	Fulton	M. & O. R. R.	400
214	Cecilia	Hardin	I. C. R. R.	711
215	Cecilian Junction	Hardin	I. C. R. R.	637
216	Cedar Grove	Pulaski	Q. & C. R. R.	847
217	Centertown	Ohio	U. S. B. M.	449
218	Central City	Muhlenberg	U. S. B. M.	426
219	Cerulean	Trigg	U. S. B. M. Station	458
220	Chambers	Montgomery	C. & O. R. R.	831
221	Chapman	Lawrence	U. S. B. M.	587
222	Chatteroy, W. Va.		N. & W. R. R.	655
223	Chavies	Perry	L. & E. R. R.	797
224	Chenowee Tunnel	Breathitt	L. & E. R. R.	938
225	Cherokee	Lawrence	U. S. B. M.	646
226	Chestnut Mtn	Knott	U. S. B. M.	1,825
227	Chicago	Marion	L. & N. R. R.	673
228	Chilesburg	Fayette	C. & O. R. R.	1,006
229	Christianburg	Shelby	U. S. B. M. R. R. Station	906
230	Clark	Jefferson	L. S. R. R.	674
231	Clark	Mason	L. & N. R. R.	754
232	Clark	Shelby	U. S. B. M.	685
233	Clark's	McCracken	I. C. R. R.	351
234	Claxton	Caldwell	U. S. B. M.	450
235	Clay	Webster	U. S. B. M.	380
236	Clay City	Powell	U. S. B. M. L. & E. Station	628
237	Clayhole	Breathitt	U. S. B. M. op. P. O.	824
238	Cleaton	Muhlenberg	U. S. B. M.	442
239	Cleopatra	McLean	U. S. B. M.	498
240	Cleringer	Pike	U. S. B. M.	732
241	Cliff	Floyd	U. S. B. M. C. & O. Station	636
242	Clifty	Todd	U. S. B. M.	805
243	Clinton	Hickman	B. M. at Court House	389
244	Cloverport	Breckinridge	L. W. in Ohio River	340
245	Cloverport	Breckinrdige	L. H. & St. L. R. R.	387
246	Clyffeside	Boyd	C. & O. R. R.	548
247	Coalrun	Pike	C. & O. R. R.	676
248	Coalton	Boyd	U. S. B. M.	615
249	Cobb	Caldwell	U. S. B. M. R. R. Station	463
250	Colltown	Hopkins	U. S. B. M.	431
251	Colburg	Adair	Kentucky Geological Survey	730
252	Colby	Clark	C. & O. R. R.	1,023
253	Colesburg	Hardin	L. & N. R. R.	425
254	Colly	Letcher	U. S. B. M.	1,209
255	Colson	Letcher	U. S. B. M.	1,173

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
256	Columbus	Hickman	M. & O. R. R.	313
257	Columbus	Hickman	L. W. in Mississippi River	270
258	Comer	McLean	U. S. B. M.	460
259	Concord	Lewis	C. & O. R. R.	518
260	Concordia	Meade	L. W. in Ohio River	346
261	Congleton	McLean	U. S. B. M.	464
262	Conner	Shelby	U. S. B. M. L. & N. Station	706
263	Consolation	Shelby	L. S. R. R.	868
264	Constance	Boone	B. M. on P. O.	497
265	Conway	Rockcastle	L. & N. R. R.	951
266	Coolers Knob	Caldwell	U. S. B. M.	743
267	Copeland	Breathitt	L. & E. R. R.	765
268	Coral Ridge	Jefferson	U. S. B. M.	500
269	Coraville	Henderson	U. S. B. M.	412
270	Corbin	Whitley	L. & N. R. R.	1,046
271	Corinth	Grant	Q. & C. R. R.	953
272	Cornishville	Mercer	U. S. B. M.	736
273	Corydon	Henderson	U. S. B. M.	459
274	Covington	Kenton	C. & O. R. R.	522
275	Covington	Kenton	B. M. on P. O.	513
276	Cowan	Fleming	L. & N. R. R.	927
277	Crab Orchard	Lincoln	L. & N. R. R.	919
278	Craftsfield	Letcher	U. S. B. M.	1,234
279	Crayne	Crittenden	U. S. B. M. R. R. Station	643
280	Craynor	Floyd	U. S. B. M.	702
281	Crescent Hill	Jefferson	L. & N. R. R.	515
282	Crescent Springs	Kenton	Q. & C. R. R.	785
283	Crider	Caldwell	U. S. B. M. R. R. Station	487
284	Crittenden	Grant	Q. & C. R. R.	908
285	Crockettsville	Breathitt	U. S. B. M.	710
286	Crofton	Christian	U. S. B. M.	608
287	Cromwell	Ohio	U. S. B. M.	482
288	Cropper	Shelby	L. & N. R. R.	889
289	Crow-Hickman	Daviess	U. S. B. M.	404
290	Crum, W. Va.		N. & W. R. R.	617
291	Cullen	Union	U. S. B. M.	476
292	Cumberland Falls	McCreary	L. W. ½ mile above Falls	843
293	Cumberland Falls	Whitley	L. W. 300 yds. below Falls	789
294	Cumberland F. Sta	Whitley	Q. & C. R. R.	1,256
295	Cumberland Gap	Tri-State Cor.		1,648
296	Cumberland Gap	Bell		1,665
297	Cumberland River	Wayne	Mill Spring Ford	588
298	Cumberland River	Pulaski	L. W. Burnside	589
299	Cumberland River	Pulaski	L. W. at mouth of Fishing Cr.	577
300	Cumberland River	Pulaski	L. W. at mouth of Rockcastle River	662
301	Cumberland River	Bell	L. W. at Pineville	951
302	Curdsville	Daviess	U. S. B. M.	393
303	Curlew	Union	U. S. B. M.	366
304	Curry	Mercer	L. S. R. R.	828
305	Cynthiana	Harrison	L. & N. R. R.	700
306	Cyrus, W. Va.		N. & W. R. R.	569
307	Dalton	Hopkins	U. S. B. M.	438

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
308	Daniel Boone	Hopkins	U. S. B. M.	494
309	Danville	Boyle	Q. & C. R. R.	955
310	Danville C. H.	Boyle	U. S. B. M.	989
311	Davenport	Butler	U. S. B. M.	461
312	Davidson	Ohio	I. C. R. R.	429
313	Dawson Springs	Hopkins	U. S. B. M.	436
314	Dayton	Campbell	C. & O. R. R.	542
315	Deanefield	Ohio	I. C. R. R.	460
316	Deep Cut	Carter-Lewis	C. & O. R. R.	1,036
317	Deerlick	Logan	U. S. B. M.	683
318	DeKoven	Union	U. S. B. M. R. R. Station	365
319	Delaware	Daviess	U. S. B. M.	397
320	Delorme, W. Va.		N. & W. R. R.	728
321	Dema	Knott	U. S. B. M.	711
322	Democrat	Letcher	U. S. B. M.	1,220
323	Dempster Junction	Breckinridge	L. H. & St. L. R. R.	408
324	Denton	Carter	U. S. B. M.	669
325	Denver	Johnson		629
326	Depoy	Muhlenberg	U. S. B. M.	500
327	Derby	Webster	U. S. B. M.	369
328	Dermont	Daviess	U. S. B. M.	478
329	Devon, W. Va.		N. & W. R. R.	761
330	Dexter	Calloway	N. C. & St. L. R. R.	424
331	Diamond Springs	Logan	U. S. B. M.	424
332	Dixie	Henderson	U. S. B. M.	457
333	Dixon	Boone	Q. & C. R. R.	928
334	Dixon	Webster	U. S. B. M. at C. H.	544
335	Donerail	Fayette	Q. & C. R. R.	882
336	Dongola	Letcher	U. S. B. M.	1,148
337	Dorton	Pike	U. S. B. M.	1,017
338	Dover	Mason	C. & O. R. R.	508
339	Drakesboro	Muhlenberg	U. S. B. M.	398
340	Dravo	Jefferson	L. S. R. R.	599
341	Drew	Knott	U. S. B. M.	1,296
342	Dry Ridge	Grant	Q. & C. R. R.	949
343	Dulaney	Caldwell	U. S. B. M.	547
344	Dumont	Breathitt	L. & E. R. R.	748
345	Dunbar	Butler	U. S. B. M.	467
346	Duncannon	Madison	L. & N. R. R.	989
347	Dundee	Powell	U. S. B. M. L. & E. Station	711
348	Dundee	Ohio	U. S. B. M.	424
349	Dunmor	Muhlenberg	U. S. B. M.	593
350	Duvall	Scott	U. S. B. M.	840
351	Dwale	Floyd	U. S. B. M.	649
352	Dwarf	Breathitt	U. S. B. M.	892
353	Dycusburg	Crittenden	U. S. B. M.	373
354	Eagle	Carroll	L. & N. R. R.	465
355	Earles	Muhlenberg	U. S. B. M.	512
356	Earlington	Hopkins	U. S. B. M.	422
357	East Bernstadt	Laurel	L. & N. R. R.	1,159
358	East Cairo	Ballard	I. C. R. R.	322
359	East Eagle	Owen	U. S. B. M.	956

Elevation, Above Sea of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
360	East Louisville	Jefferson	L. & N. R. R.	460
361	East Point	Johnson	C. & O. R. R.	627
362	East View	Hardin	I. C. R. R.	761
363	Eastwood	Jefferson	U. S. B. M. L. & N. Station	652
364	Ebenezer	Mercer	U. S. B. M.	821
365	Eddyville	Lyon	I. C. R. R.	436
366	Edgar	Floyd	U. S. B. M.	660
367	Edjouett	Perry	L. & E. R. R.	884
368	Edwards	Logan	L. & N. R. R.	532
369	Ekron	Meade	L. H. & St. L. R. R.	627
370	Elba	McLean	U. S. B. M.	497
371	Elic	Knott	U. S. B. M. near P. O.	1,064
372	Elihu	Pulaski	Q. & C. R. R.	840
373	Elizabethtown	Hardin	L. & N. R. R.	683
374	Elkatawa	Breathitt	U. S. B. M. L. & E. Station	746
375	Elk Chester	Fayette	U. S. B. M.	841
376	Elkhorn	Franklin	U. S. B. M. R. R. Station	662
377	Elkhorn City	Pike	C. & O. R. R.	790
378	Elkin	Clark	L. & N. R. R.	773
379	Elkton	Todd	E. & G. R. R.	602
380	Elliston	Grant	L. & N. R. R.	555
381	Elm Lick	Ohio	I. C. R. R.	456
382	Elmrock	Knott	U. S. B. M.	1,051
383	Elmville	Franklin	U. S. B. M.	720
384	Elmwood	Webster	U. S. B. M.	395
385	Elva	Marshall	N. C. & St. L. R. R.	360
386	Eminence	Henry	L. & N. R. R.	922
387	Empire	Christian	U. S. B. M.	518
388	English	Carroll	L. & N. R. R.	466
389	Ennis	Muhlenberg	U. S. B. M.	458
390	Enola Ferry	Butler	U. S. B. M.	404
391	Enon	Caldwell	U. S. B. M.	464
392	Enterprise	Carter	C. & O. R. R.	831
393	Eolia	Letcher	U. S. B. M.	1,685
394	Epley's	Logan	L. & N. R. R.	661
395	Era	Christian	U. S. B. M.	682
396	Erlanger	Kenton	Q. & C. R. R.	905
397	Ermine	Letcher	U. S. B. M.	1,181
398	Escondida	Bourbon	L. & N. R. R.	907
399	Estill Furnace	Estill	Foundation	1,261
400	Eubank	Pulaski	Q. & C. R. R.	1,172
401	Euclid	Greenup	U. S. B. M.	668
402	Euterpe	Henderson	U. S. B. M.	441
403	Ewing	Fleming	L. & N. R. R.	903
404	Ewington	Montgomery	C. & O. R. R.	992
405	Excelsior	Bell	U. S. B. M. at Coal Mines	1,133
406	Fairdale	Jefferson	U. S. B. M.	474
407	Fairfield	Nelson	U. S. B. M.	715
408	Fair Grounds	Jefferson	U. S. B. M.	727
409	Faith	McLean	U. S. B. M.	460
410	Falcon	Hancock	L. H. & St. L. R. R.	364
411	Falls of Rough	Grayson	L. H. & St. L. R. R.	423
412	Falmouth	Pendleton	L. & N. R. R.	530

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
413	Fariston	Laurel	L. & N. R. R.	1,116
414	Farmdale	Franklin	U. S. B. M.	849
415	Farmers	Rowan	C. & O. R. R.	668
416	Farmersville	Caldwell	U. S. B. M.	580
417	Faulconer	Boyle	B. M. on natural rock	890
418	Faywood	Woodford	U. S. B. M.	858
419	Fed	Floyd	U. S. B. M.	837
420	Fenwick	Fayette	U. S. B. M. L. & E. Station	933
421	Ferndale	Bell	L. & N. R. R.	1,175
422	Field	Shelby	U. S. B. M. R. R. Station	735
423	Fillmore	Ballard	I. C. R. R.	322
424	Filson	Powell	U. S. B. M. L. & E. Station	667
425	Fincastle	Lee	U. S. B. M. L. & E. Station	711
426	Finchville	Shelby	L. & N. R. R.	679
427	Fisherville	Jefferson	U. S. B. M.	562
428	Flanagan	Clark	L. & N. R. R.	850
429	Flat Gap	Johnson	U. S. B. M.	821
430	Flat Lick	Knox	L. & N. R. R.	986
431	Flat Rock	Caldwell	U. S. B. M.	496
432	Flat Rock	McCreary	Q. & C. R. R.	1,300
433	Florence	Boone	U. S. B. M.	935
434	Florence	McCracken	I. C. R. R.	356
435	Flournoy	Union	U. S. B. M.	419
436	Floyds	Pulaski	Q. & C. R. R.	1,136
437	Ford	Clark	L. & N. R. R.	623
438	Ford Branch	Pike	U. S. B. M.	692
439	Ford's Ferry	Crittenden	U. S. B. M.	360
440	Fordsville	Ohio	I. C. R. R.	476
441	Forkland	Boyle	U. S. B. M.	807
442	Fort Estill	Madison	L. & N. R. R.	1,081
443	Fort Estill Jct.	Madison	L. & N. R. R.	1,036
444	Fort Gay, W. Va.		N. & W. R. R.	578
445	Fort Jefferson	Ballard	I. C. R. R.	322
446	Fort Thomas	Campbell	U. S. B. M.	852
447	Foster	Bracken	C. & O. R. R.	499
448	Fox Creek	Anderson	U. S. B. M.	857
449	Francis	Crittenden	U. S. B. M.	550
450	Frankfort	Franklin	L. W. in Kentucky River	470
451	Frankfort	Franklin	U. S. B. M. on P. O.	512
452	Franklin	Simpson	L. & N. R. R.	691
453	Fredonia	Caldwell	U. S. B. M. R. R. Station	404
454	Fredonia	Caldwell	U. S. B. M.	422
455	Friendship	Caldwell	U. S. B. M.	525
456	Frost	Christian	C. & O. R. R.	544
457	Fruit Hill	Christian	U. S. B. M.	641
458	Fryer	Caldwell	U. S. B. M.	374
459	Fuget	Johnson	U. S. B. M.	715
460	Fullers	Lawrence	C. & O. R. R.	570
461	Fulton	Fulton	U. S. B. M.	357
462	Futrell	Trigg	I. C. R. R.	394
463	Gainesville	Allen	U. S. B. M.	546
464	Gaithers	Hardin	L. & N. R. R.	644
465	Gallup	Lawrence	U. S. B. M.	591

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
466	Gap in Knob	Bullitt	U. S. B. M.	493
467	Garfield	Breckinridge	L. H. & St. L. R. R.	780
468	Garnett	Harrison	L. & N. R. R.	715
469	Garrison	Lewis	C. & O. R. R.	526
470	Gates	Rowan	C. & O. R. R.	819
471	Geneva	Henderson	U. S. B. M.	387
472	George's Creek	Lawrence	C. & O. R. R.	590
473	Georgetown	Scott	U. S. B. M.	866
474	Gest	Henry	U. S. B. M.	509
475	Gethsemane	Nelson	L. & N. R. R.	458
476	Gilberts Creek	Lincoln	U. S. B. M.	855
477	Gilbertsville	Marshall	I. C. R. R.	421
478	Gishton	Muhlenberg	U. S. B. M.	560
479	Glade	Marshall	N. C. & St. L. R. R.	392
480	Glasgow	Barren	G. R. R.	780
481	Glasgow Junction	Barren	L. & N. R. R.	623
482	Glenarvon	Clark	L. & E. R. R.	971
483	Glencairn	Powell	U. S. B. M. L. & E. Station	784
484	Glencoe	Gallatin	L. & N. R. R.	542
485	Glendale	Hardin	L. & N. R. R.	640
486	Glendeane	Breckinridge	L. H. & St. L. R. R.	433
487	Glen Hayes, W. Va.		N. & W. R. R.	593
488	Glenn	Lewis	C. & O. R. R.	543
489	Golds	Webster	U. S. B. M.	358
490	Gordon	Muhlenberg	I. C. R. R.	429
491	Goshen	Oldham	U. S. B. M.	699
492	Gracey	Christian	I. C. R. R.	496
493	Graham Station	Muhlenberg	U. S. B. M.	409
494	Grand Rivers	Livingston	I. C. R. R.	437
495	Grant	Carter	C. & O. R. R.	671
496	Gratz	Owen	U. S. B. M.	484
497	Gravel Switch	Livingston	I. C. R. R.	351
498	Gravel Switch	Marion	L. & N. R. R.	896
499	Gray	Knox	L. & N. R. R.	1,096
500	Grays Branch	Greenup	C. & O. R. R.	533
501	Grayson	Carter	U. S. B. M. C. H.	685
502	Grayson Springs	Grayson	I. C. R. R.	658
503	Green Castle	Warren	U. S. B. M.	424
504	Greendale	Fayette	U. S. B. M.	936
505	Green River		Lock 1, top of wall	361
506	Green River		Lock 2, top of wall	374
507	Green River	Edmonson	L. W. in Green river at Dennison's Ferry	398
508	Green River		Lock 3, top of wall	390
509	Green River	Hart	L. W. in Green River	399
510	Green River	Hart	L. W. Cub Run Creek	402
511	Green River	Butler	Lock 4, top of wall	405
512	Green River	Hart	L. W. Blue Springs Creek	407
513	Green River	Butler-Warren	Lock 5, top of wall	419
514	Green River	Edmonson	Lock 6, top of wall	431
515	Green River	Hart	L. W. at Rio	436
516	Green River	Green	L. W. mouth of Little Barren River	453

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
517	Green River	Green	L. W. Greensburg	516
518	Green River	Green	L. W. Bluff Boone Station	531
519	Green River	Taylor	L. W. at Atchley's Mill	548
520	Green River	Taylor	L. W. Griffith's Spring	590
521	Green River	Adair	L. W. at Plum Point	634
522	Greensburg	Green	Court House	583
523	Greenup	Greenup	L. W. in Ohio River	478
524	Greenup	Greenup	Clerk's Office	540
525	Greenville	Muhlenberg	U. S. B. M. C. H.	538
526	Greenwood	McCreary	Q. & C. R. R.	1,203
527	Grigsby	Breathitt		899
528	Grove	Center-Union	U. S. B. M.	387
529	Guffie	McLean	U. S. B. M.	454
530	Gulnore	Pike	U. S. B. M.	694
531	Gum Grove	Union	U. S. B. M.	386
532	Gum Sulphur	Rockcastle	L. & N. R. R.	878
533	Guston	Meade	L. H. & St. L. R. R.	671
534	Guthrie	Todd	L. & N. R. R.	517
535	Habit	Daviess	U. S. B. M.	559
536	Haddix	Breathitt	L. & E. R. R.	751
537	Hadensville	Todd	L. & N. R. R.	534
538	Hadley	Warren	U. S. B. M.	659
539	Halifax	Allen		732
540	Hall's Gap	Lincoln	L. & N. R. R.	993
541	Hamby Station	Hopkins	U. S. B. M.	412
542	Hamilton	Ohio	I. C. R. R.	442
543	Hamlak	Pike	C. & O. R. R.	667
544	Hampton	Boyd	U. S. B. M.	551
545	Handshoe	Knott	U. S. B. M.	885
546	Handyville	Daviess	U. S. B. M.	397
547	Hansbrough	Hardin	I. C. R. R.	676
548	Hanson	Hopkins	U. S. B. M.	433
549	Happy Hollow	Hopkins	U. S. B. M.	381
550	Harbison	Shleby	U. S. B. M. R. R. Station	792
551	Hardesty	Crittenden		339
552	Hardin	Marshall	N. C. & St. L. R. R.	424
553	Harding	Union	U. S. B. M. R. R. Station	374
554	Hardinsburg	Breckinridge	L. H. & St. L. R. R.	700
555	Hardinsville	Shelby	L. & N. R. R.	534
556	Hardy	Pike		744
557	Harlan	Harlan	U. S. B. M. C. H.	1,197
558	Harned	Breckinridge	L. H. & St. L. R. R.	720
559	Harold	Floyd	C. & O. R. R.	666
560	Harris	Madison	L. & N. R. R.	1,009
561	Harrodsburg	Mercer	U. S. B. M. C. H.	871
562	Harrodsburg Jct.	Mercer	Q. & C. R. R.	900
563	Harrod's Creek	Jefferson	Weather Bureau	410
564	Hartford	Ohio	U. S. B. M.	434
565	Hartley	Pike	U. S. B. M. L. W. in Beaver Creek	972
566	Harvieland	Franklin	U. S. B. M.	612
567	Hatton	Shelby	U. S. B. M. R. R. Station	706
568	Hawesville	Hancock	L. H. & St. L. R. R.	367

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
569	Hawesville	Hancock	B. M. on Court House	423
570	Hawkins	Christian	U. S. B. M.	759
571	Hayden	Lincoln	L. & N. R. R.	823
572	Haynesville	Ohio	U. S. B. M.	476
573	Hazard	Perry	U. S. B. M.	873
574	Hazel	Calloway	N. C. & St. L. R. R.	572
575	Hazle Patch	Laurel	L. & N. R. R.	843
576	Hearin	Webster	U. S. B. M.	468
577	Heath	McCracken	I. C. R. R.	423
578	Hebbardsville	Henderson	U. S. B. M.	421
579	Hebron	Boone	B. M. on Clove's Store	877
580	Hedges	Clark	C. & O. R. R.	976
581	Hedgeville	Boyle	U. S. B. M.	924
582	Heflin	Ohio	U. S. B. M.	400
583	Helena	Mason	L. & N. R. R.	869
584	Hellier	Pike	C. & O. R. R.	1,135
585	Hemp Ridge	Shelby	L. S. R. R.	731
586	Henderson	Henderson	L. W. in Ohio River	317
587	Henderson	Henderson	L. & N. R. R.	432
588	Henshaw	Union	U. S. B. M. R. R. Station	371
589	Herman	Union	U. S. B. M.	401
590	Herndon	Scott	S. R. R.	806
591	Hesler	Owen	U. S. B. M.	942
592	Hewlett, W. Va.		N. & W. R. R.	570
593	Hewletts	Daviess	U. S. B. M.	428
594	Hickman	Fulton	L. W. in Mississippi River	257
595	Hickman	Fulton	N. C. & St. L. R.	306
596	Hickory Grove	Graves	I. C. R. R.	415
597	Higginsport	Bracken	L. W. in Ohio River	445
598	High Bridge	Jessamine	Q. & C. R. R.	762
599	High Grove	Nelson	U. S. B. M.	499
600	Highland	Union	I. C. R. R.	378
601	Hikes Point	Jefferson	U. S. B. M.	562
602	Hillenmeyer	Fayette	U. S. B. M.	939
603	Hindman	Knott	U. S. B. M. on C. H.	1,032
604	Hinton	Scott	Q. & C. R. R.	943
605	Hippo	Floyd	U. S. B. M.	733
606	Hitchins	Carter	C. & O. R. R.	613
607	Hitesville	Union		400
608	Holland	Allen		805
609	Hollibush	Knott	U. S. B. M.	872
610	Holt	Breckinridge	L. H. & St. L. R. R.	374
611	Hombre	Perry	L. & E. R. R.	926
612	Hoods	Crittenden	U. S. B. M.	444
613	Hopewell	Greenup	E. K. R. R.	557
614	Hopkinsville	Christian	L. & N. R. R.	541
615	Hopson	Caldwell	U. S. B. M.	544
616	Horse Branch	Ohio	I. C. R. R.	476
617	Horse Cave	Hart	L. & N. R. R.	603
618	Horton	Ohio	I. C. R. R.	427
619	Huber	Bullitt	L. & N. R. R.	458
620	Hunnewell	Greenup	E. K. R. R.	523
621	Huntsville	Butler	U. S. B. M.	420

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
622	Hyattsville	Garrard	U. S. B. M.	1,035
623	Ilsley	Hopkins	I. C. R. R.	412
624	Independence	Kenton	L. & N. R. R.	752
625	Indian Fields	Clark	U. S. B. M. L. & E. Station	746
626	Inez	Martin	U. S. B. M.	638
627	Iola	Marshall	N. C. & St. L. R. R.	352
628	Irma	Crittenden		504
629	Irvine	Estill	L. W. in Kentucky River	571
630	Irvington	Breckinridge	L. H. & St. L. R. R.	577
631	Island	McLean	U. S. B. M.	417
632	Island Creek	Pike	C. & O. R. R.	686
633	Isom	Letcher	U. S. B. M.	1,107
634	Ivan	Knott	U. S. B. M.	1,315
635	Ivel	Floyd	C. & O. R. R.	657
636	Ivyton	Magoffin		895
637	Jabez	Russell	U. S. B. M.	1,051
638	Jackson	Breathitt	U. S. B. M. at C. H.	790
639	Jamboree P. O.	Pike	Peter Creek	943
640	Jeffersontown	Jefferson	U. S. B. M.	711
641	Jellico	Whitley	L. & N. R. R.	937
642	Jenkins	Letcher	U. S. B. M.	1,527
643	Jericho	Henry	L. & N. R. R.	890
644	Jessamine	Jessamine	Q. & C. R. R.	896
645	Jetts	Franklin	U. S. B. M.	791
646	Jewell	Pike		1,407
647	John	Pike	U. S. B. M.	693
648	Johnson	Fleming	L. & N. R. R.	898
649	Jolly	Breckinridge	L. H. & St. L. R. R.	652
650	Jolly	Daviess	U. S. B. M.	545
651	Jordan	Fulton	M. & O. R. R.	404
652	Joyes	Shelby	L. S. R. R.	718
653	Junction City	Boyle	Q. & C. R. R.	982
654	Kavanaugh	Boyd	U. S. B. M.	581
655	Keller	Harrison	L. & N. R. R.	715
656	Kelly	Christian	L. & N. R. R.	681
657	Kelsey	Caldwell	U. S. B. M.	403
658	Kennebec	Franklin	U. S. B. M. R. R. Station	507
659	Kenney	Scott	L. S. R. R.	832
660	Kenova, W. Va.		N. & W. R. R.	589
661	Kenton Heights	Kenton	Q. & C. R. R.	830
662	Kentucky River	Carroll	L. W. at Carrollton	413
663	Kentucky River	Carroll	L. W. at Pool 1	430
664	Kentucky River	Owen	L. W. at Pool 2	443
665	Kentucky River	Franklin	L. W. at Pool 3	446
666	Kentucky River	Franklin	L. W. at Frankfort	470
667	Kentucky River	Anderson	L. W. at Tyrone	484
668	Kentucky River	Jessamine	L. W. at High Bridge	492
669	Kentucky River	Jessamine	L. W. at Hickman Bridge	503
670	Kentucky River	Fayette	L. W. at Clay's Ferry	533
671	Kentucky River	Clark	L. W. at Boonesboro	538
672	Kentucky River	Clark	L. W. at mouth of Red River	548
673	Kentucky River	Estill	L. W. at Irvine	571
674	Kentucky River	Lee	L. W. at Beattyville	618

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Eleva-tion.
675	Kermit, W. Va.		N. & W. R. R.	629
676	Kevil	Ballard	I. C. R. R.	439
677	Kewanee	Pike	U. S. B. M.	683
678	Keyser	Pike	U. S. B. M.	674
679	Kilgore	Carter	U. S. B. M.	634
680	Kings Mountain	Lincoln	Q. & C. R. R.	1,168
681	Kinkaid	Scott	Q. & C. R. R.	862
682	Kirk	Breckinridge	L. H. & St. L. R. R.	689
683	Kirkmansville	Todd	U. S. B. M.	476
684	Kirkwood	Mercer	U. S. B. M.	852
685	Kirkwood Springs	Hopkins	U. S. B. M.	440
686	Kise	Lawrence	C. & O. R. R.	595
687	Kiserton	Bourbon	L. & N. R. R.	798
688	Kite	Knott	U. S. B. M.	879
689	Knob Lick	Nelson	L. & N. R. R.	900
690	Knottsville	Daviess	U. S. B. M.	559
691	Kona	Letcher	L. & E. R. R.	1,257
692	Krypton	Perry	L. & E. R. R.	805
693	Kuttawa	Lyon	I. C. R. R.	436
694	Lackey	Floyd	U. S. B. M.	695
695	Lagrange	Oldham	L. & N. R. R.	841
696	Lair	Harrison	L. & N. R. R.	743
697	Laketon	Carlisle	M. & O. R. R.	315
698	Lancaster	Garrard	U. S. B. M.	1,032
699	Langford	Rockcastle	L. & N. R. R.	905
700	Langley	Floyd	U. S. B. M.	673
701	Latonia	Kenton	L. & N. R. R.	537
702	Lawrenceburg	Anderson	U. S. B. M. C. H.	788
703	Layman P. O.	Harlan	U. S. B. M.	1,116
704	Lebanon	Marion	L. & N. R. R.	754
705	Lebanon Church	Franklin	U. S. B. M.	889
706	Lebanon Junction	Bullitt	L. & N. R. R.	429
707	Leburn	Knott	U. S. B. M.	1,045
708	Leitchfield	Grayson	I. C. R. R.	635
709	L. & E. Junction	Clark	U. S. B. M. L & E. Station	929
710	L & E. Tunnel	Clark	L. & E. R. R.	1,006
711	Leon	Carter	C. & O. R. R.	598
712	Levias	Crittenden		474
713	Levingood	Pendleton	L. & N. R. R.	629
714	Lewis	Daviess	L. & N. R. R.	403
715	Lewisburg	Logan	U. S. B. M.	496
716	Lewisburg	Mason	L. & N. R. R.	466
717	Lewisport	Hancock	L. W. in Ohio River	333
718	Lewisport	Hancock	U. S. B. M.	393
719	Lexington	Fayette	U. S. B. M.	957
720	Licking River	Kenton	L. W. at Covington	432
721	Licking River	Kenton	L. W. at De Coursey	445
722	Licking River	Kenton	L. W. at Visalia	453
723	Licking River	Pendleton	L. W. at mouth of South Fork	512
724	Licking River	Pendleton	L. W. at mouth of North Fork	536
725	Licking River	Robertson	L. W. at Claysville	544
726	Licking River	Nicholas	L. W. at Lower Blue Lick	566
727	Licking River	Nicholas	L. W. at mouth of Big Fleming	577

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
728	Licking River	Nicholas	L. W. at mouth of Upper Blue Lick	592
729	Licking River	Bath	L. W. at mouth of Flat Creek	597
730	Licking River	Bath	L. W. at mouth of Slate Creek	623
731	Licking River	Bath	L. W. at mouth of Salt Creek	644
732	Licking River	Bath	L. W. at mouth of Beaver	676
733	Licking River	Morgan	L. W. at mouth of Elk Fork	733
734	Licking River	Morgan	L. W. at West Liberty	742
735	Licking River	Morgan	L. W. at mouth of White Oak	766
736	Licking River	Morgan	L. W. at mouth at Rockhouse	776
737	Licking River	Magoffin	L. W. at mouth of Johnson's Fork	806
738	Licking River	Magoffin	L. W. at mouth of Middle Fk.	820
739	Licking River	Magoffin	L. W. at Salyersville	840
740	Lillian	Perry	U. S. B. M.	792
741	Lily	Laurel	L. & N. R. R.	1,072
742	Limeville	Greenup	C. & O. R. R.	531
743	Lisman	Webster	U. S. B. M.	410
744	Little Cypress	Marshall	I. C. R. R.	352
745	Little Muddy	Butler	U. S. B. M.	468
746	Livermore	McLean	U. S. B. M.	401
747	Livia	McLean	L. & N. R. R.	422
748	Livingston	Crittenden	U. S. B. M. R. R. Station	370
749	Livingston	Rockcastle	L. & N. R. R.	858
750	Lockport	Henry	U. S. B. M.	450
751	Lockwood	Boyd	C. & O. R. R.	546
752	Lodiburg	Breckinridge	L. H. & St. L. R. R.	485
753	Logan	Shelby	L. & N. R. R.	613
754	Logansport	Butler	U. S. B. M.	471
755	Lombard	Powell	U. S. B. M. L. & E. Station	681
756	London	Laurell	L. & N. R. R.	1,209
757	Long	Warren	U. S. B. M.	618
758	Long Branch	Meade	L. H. & St. L. R. R.	417
759	Long Fork	Pike	U. S. B. M.	1,019
760	Long Grove	Hardin	I. C. R. R.	605
761	Long Run	Jefferson	U. S. B. M. L. & N. Station	630
762	Longview	Jefferson	U. S. B. M.	445
763	Lookout	Pike	U. S. B. M.	968
764	Loretto	Marion	L. & N. R. R.	711
765	Lost Creek	Breathitt	U. S. B. M.	751
766	Louisa	Lawrence	L. W. in Big Sandy River	526
767	Louisa	Lawrence	C. & O. R. R.	587
768	Louisville	Jefferson	L. W. above Falls	386
769	Louisville	Jefferson	Weather Bureau	525
770	Lovell	Knox	L. & N. R. R.	982
771	Lowell	Garrard	L. & N. R. R.	799
772	Ludlow	Kenton	Q. & C. R. R.	535
773	Luzon	Webster	U. S. B. M.	455
774	Lyndon	Jefferson	U. S. B. M.	561
775	Lynn Camp	Laurel	L. & N. R. R.	1,045
776	Lyonia	Hancock	U. S. B. M.	514
777	McBrayer	Anderson	U. S. B. M.	832
778	McClain	Henderson	I. C. R. R.	378

Elevation, Above Sea, of Points in Kentucky[a]—Continued.

No.	Place	County	Station	Elevation.
779	McDonald Ferry	Franklin	U. S. B. M.	503
780	McDowell	Floyd	U. S. B. M.	691
781	McGowan	Caldwell	U. S. B. M.	484
782	McGowan Ferry	Woodford	U. S. B. M.	656
783	McHenry	Ohio	U. S. B. M.	427
784	McKinley	McLean	U. S. B. M.	381
785	McKinley	Lincoln	Q. & C. R. R.	1,008
786	McLeod	Logan	L. & N. R. R.	610
787	McNary	Muhlenberg	I. C. R. R.	427
788	McNeal	Boyd	U. S. B. M.	593
789	Macedonia	Christian	U. S. B. M.	520
790	Madisonville	Hopkins	U. S. B. M.	470
791	Magan	Ohio	U. S. B. M.	617
792	Mahan	Whitley	L. & N. R. R.	899
793	Majestic	Pike		860
794	Major	Henderson	I. C. R. R.	378
795	Manchester	Lewis	L. W. in Ohio River	451
796	Manchester	Lewis	C. & O. R. R.	525
797	Manitou	Hopkins	U. S. B. M.	427
798	Mannington	Christian	U. S. B. M.	423
799	Marcellus	Garrard	U. S. B. M.	915
800	Maretburg	Rockcastle	L. & N. R. R.	1,165
801	Marion	Crittenden	U. S. B. M. R. R. Station	583
802	Marksbury	Garrard	U. S. B. M.	981
803	Marrowbone	Pike	C. & O. R. R.	719
804	Marvin	Lawrence	U. S. B. M.	604
805	Mason	Grant	Q. & C. R. R.	924
806	Masonville	Christian	T. C. R. R.	557
807	Massack	McCracken	U. S. B. M.	450
808	Masu	Perry	L. & E. R. R.	905
809	Matewan, W. Va.		N. & W. R. R.	699
810	Mattie	Knott	U. S. B. M.	1,334
811	Mattingly	Breckinridge	L. H. & St. L. R. R.	343
812	Maurice	Kenton	L. & N. R. R.	498
813	Mavity	Boyd	U. S. B. M.	612
814	Maxon	McCracken	I. C. R. R.	365
815	Maxwell	Ohio	U. S. B. M.	438
816	Mayde	Madison	L. & N. R. R.	986
817	Mayfield	Graves	I. C. R. R.	421
818	Mayking	Letcher	L. & E. R. R.	1,208
819	Mayo	Mercer	U. S. B. M.	905
820	Maysville	Mason	L. W. in Ohio River	448
821	Maysville	Mason	C. & O. R. R.	507
822	Maywood	Lincoln	L. & N. R. R.	1,015
823	Meads	Boyd	C. & O. R. R.	590
824	Meadow Lawn	Jefferson	U. S. B. M.	446
825	Means Tennel	Carter	C. & O. R. R.	770
826	Meek	Johnson	C. & O. R. R.	609
827	Melvin	Floyd	U. S. G. S.	893
828	Memphis Junction	Warren	L. & N. R. R.	533
829	Mentor	Campbell	C. & O. R. R.	500
830	Mercer	Muhlenberg	I. C. R. R.	471
831	Mexico	Crittenden	U. S. B. M. R. R. Station	494

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
832	Middlesboro	Bell	U. S. B. M. at R. R. Station	1,139
833	Middletown	Jefferson	U. S. B. M.	722
834	Midway	Woodford	U. S. B. M. on P. O.	820
835	Milledgeville	Lincoln	U. S. B. M.	1,035
836	Mill Springs	Wayne	U. S. B. M.	844
837	Millwood	Grayson	I. C. R. R.	603
838	Mississippi River	Fulton	L. W. at Hickman	256
839	Mississippi River	Hickman	L. W. at Columbus	270
840	Mississippi River	Ballard	L. W. at mouth of Ohio River	272
841	Mitchellsburg	Boyle	U. S. B. M.	1,006
842	Monica	Lee	U. S. B. M. L. & E. Station	683
843	Monterey	Owen	L. W. in Kentucky River	442
844	Monterey	Owen	U. S. B. M.	543
845	Monticello	Wayne	U. S. B. M. on C. H.	926
846	Montrose	Fayette	U. S. B. M. L. & E. Station	934
847	Moore	Anderson	L. S. R. R.	729
848	Mooresville	Washington	L. & N. R. R.	650
849	Moran's Summit	Madison	L. & N. R. R.	964
850	Morehead	Rowan	C. & O. R. R.	712
851	Moreland	Lincoln	U. S. B. M.	1,120
852	Morgan	Pendleton	L. & N. R. R.	610
853	Morganfield	Union	U. S. B. M. at C. H.	439
854	Morgantown	Butler	U. S. B. M.	573
855	Morton's Gap	Hopkins	U. S. B. M.	451
856	Mortonville P. O.	Woodford	U. S. B. M.	790
857	Moscow	Hickman	M. & O. R. R.	313
858	Moseleyville	Daviess	U. S. B. M.	386
859	Motherhead Ford	Bullitt	U. S. B. M.	435
860	Mouthcard	Pike	U. S. B. M.	841
861	Mt. Guthrie	Rockcastle	L. & N. R. R.	1,121
862	Mt. Savage	Carter	U. S. B. M.	610
863	Mt. Sterling	Montgomery	C. & O. R. R.	934
864	Mt. Vernon	Rockcastle	L. & N. R. R.	1,113
865	Mt. Washington	Bullitt	U. S. B. M.	688
866	Muldraugh	Meade	I. C. R. R.	740
867	Muldraugh Hill	Hardin	L. & N. Tunnel	767
868	Muldraugh Hill	Marion	L. & N. R. R.	1,160
869	Mullins	Rockcastle	L. & N. R. R.	904
870	Mundys	Woodford	U. S. B. M.	500
871	Munfordville	Hart	Court House	571
872	Murray	Calloway	N. C. & St. L. R. R.	480
873	Music	Carter	U. S. B. M.	702
874	Myers	Nicholas	L. & N. R. R.	613
875	Myra	Pike	U. S. B. M.	977
876	Natural Bridge	Powell	U. S. B. M. L. & E. Station	763
877	Naugatuck, W. Va.		N. & W. R. R.	637
878	Nazareth	Nelson	L. & N. R. R.	693
879	Neal, W. Va.		N. & W. R. R.	569
880	Nealy	Knott	U. S. B. M.	1,129
881	Nebo	Hopkins	U. S. B. M.	409
882	Ned	Breathitt	U. S. B. M. at P. O.	808
883	Nelson	Muhlenberg	U. S. B. M.	420
884	Nelsonville	Nelson	L. & N. R. R.	434

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
885	Neon	Letcher	L. & E. R. R.	1,274
886	Nevins	Anderson	L. S. R. R.	770
887	New Haven	Nelson	L. & N. R. R.	444
888	New Hope	Nelson	L. & N. R. R.	488
889	Newman	Daviess	U. S. B. M.	382
890	Newport	Campbell	C. & O. R. R.	536
891	New Richmond	Campbell	C. & O. R. R.	496
892	Niagara	Henderson		477
893	Nicholasville	Jessamine	B. M. in Court House	947
894	Nicholasville	Jessamine	U. S. B. M.	993
895	Nippa	Johnson	U. S. G. S.	622
896	Nopel	Breathitt	U. S. B. M.	792
897	Nolan, W. Va.		N. & W. R. R.	651
898	Nolin	Hardin	L. & N. R. R.	660
899	Nonesuch	Woodford	U. S. B. M.	812
900	Normal	Boyd	C. & O. R. R.	539
901	North Fork	Boyle	L. & N. R. R.	934
902	North Siding	McLean	L. & N. R. R.	394
903	Nortonville	Hopkins	U. S. B. M.	408
904	Norwood	Pulaski	Q. & C. R. R.	1,122
905	Nuckols	McLean	U. S. B. M.	400
906	Nunns	Crittenden	U. S. B. M. R. R. Station	375
907	Oaksdale	Breathitt	U. S. B. M. L. & E. Station	791
908	Oakland	Warren	L. & N. R. R.	531
909	Oak Ridge	Daviess	I. C. R. R.	458
910	Oaks	McCracken	N. C. & St. L. R. R.	348
911	Oakton	Hickman	M. & O. R. R.	321
912	O'Bannon	Jefferson	U. S. B. M.	765
913	Ohio River		L. W. at mouth	272
914	Ohio River	McCracken	L. W. at Paducah	286
915	Ohio River		L. W. at Shawneetown	301
916	Ohio River	Union	L. W. at Raleigh	302
917	Ohio River	Union	L. W. at Uniontown	306
918	Ohio River		L. W. at Mt. Vernon	308
919	Ohio River	Henderson	L. W. at Henderson	317
920	Ohio River	Daviess	L. W. at Owensboro	328
921	Ohio River		L. W. at Rockport	330
922	Ohio River	Hancock	L. W. at Lewisport	333
923	Ohio River		L. W. at Troy	335
924	Ohio River	Breckinridge	L. W. at Cloverport	340
925	Ohio River	Meade	L. W. at Concordia	346
926	Ohio River	Meade	L. W. at Brandenburg	356
927	Ohio River	Jefferson	L. W. at Louisville	386
928	Ohio River	Jefferson	L. W. at Bethlehem	399
929	Ohio River		L. W. at Madison	401
930	Ohio River		L. W. at Vevay	408
931	Ohio River	Gallatin	L. W. at Warsaw	411
932	Ohio River	Carroll	L. W. at Carrollton	413
933	Ohio River		L. W. at Cincinnati	431
934	Ohio River	Bracken	L. W. at Augusta	444
935	Ohio River	Mason	L. W. at Maysville	448
936	Ohio River		L. W. at Manchester	451
937	Ohio River	Lewis	L. W. at Quincy	464

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
938	Ohio River	Greenup	L. W. at Greenup	478
939	Ohio River	Boyd	L. W. at Catlettsburg	498
940	Oil City	Barren	G. R. R.	610
941	Oil Springs	Johnson	U. S. B. M.	892
942	Oil Valley	Wayne	U. S. B. M.	966
943	O. & K. Junction	Breathitt	U. S. B. M. L. & E. Station	737
944	Oklahoma	Daviess	U. S. B. M.	440
945	Okolona	Jefferson	U. S. B. M.	470
946	Olaton	Ohio	I. C. R. R.	430
947	Old Deposit	Jefferson	L. & N. R. R.	453
948	Oldtown	Greenup	U. S. B. M.	559
949	Olive Hill	Carter	C. & O. R. R.	752
950	Olmstead	Logan	L. & N. R. R.	563
951	Olympia	Bath	C. & O. R. R.	751
952	Oneonta	Campbell	C. & O. R. R.	501
953	Ono	Russell	U. S. B. M.	976
954	Onton	Webster	U. S. B. M.	479
955	Ophir	Morgan		756
956	Ore Knob	Pike	U. S. B. M.	1,188
957	Orell	Jefferson	L. & N. R. R.	412
958	Ortiz	Webster	U. S. B. M.	528
959	Orville	Henry	U. S. B. M.	589
960	Otter Cr. Sta.	Hardin	I. C. R. R.	664
961	Otter Pond	Caldwell	U. S. B. M.	544
962	Ottusville	Franklin	U. S. B. M.	529
963	Owensboro	Daviess	L. W. in Ohio River	328
964	Owensboro	Daviess	U. S. B. M. C. H.	396
965	Pactolus	Carter	U. S. B. M.	580
966	Paducah	McCracken	L. W. in Ohio River	286
967	Paducah	McCracken	I. C. R. R.	341
968	Paint Lick	Garrard	L. & N. R. R.	794
969	Paintsville	Johnson	C. & O. R. R.	620
970	Palace P. O.	Wayne	U. S. B. M.	649
971	Pansy Creek	Harlan	U. S. B. M.	1,328
972	Panther	Daviess	U. S. B. M.	473
973	Panther Creek	Daviess	L. & N. R. R.	377
974	Paradise	Muhlenberg	U. S. B. M.	408
975	Paris	Bourbon	L. & N. R. R.	826
976	Paris Junction	Bourbon	L. & N. R. R.	863
977	Parksville	Boyle	L. & N. R. R. R.	1,052
978	Partridge	Letcher	U. S. B. M.	1,585
979	Pauline	Logan	U. S. B. M.	571
980	Paynes Depot	Scott	U. S. B. M.	847
981	Paynes Gap	Letcher	U. S. B. M.	1,873
982	Peach Orchard	Lawrence	C. & O. R. R.	500
983	Peaks	Scott	S. R. R.	884
984	Pellville	Hancock	U. S. B. M.	531
985	Pembroke	Christian	L. & N. R. R.	562
986	Pendleton	Henry	L. & N. R. R.	830
987	Penick	Marion	L. & N. R. R.	930
988	Penny Station	Pike	U. S. B. M.	783
989	Penrod	Muhlenberg	U. S. B. M.	427
990	Perryville	Boyle	U. S. B. M.	851

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
991	Petersburg	Christian	L. & N. R. R.	400
992	Petersburg	Jefferson	U. S. B. M.	497
993	Petrie	Hancock	L. H. & St. L. R. R.	358
994	Petroleum	Allen		614
995	Pettit	Daviess	U. S. B. M.	389
996	Pewee Valley	Oldham	U. S. B. M.	784
997	Phelps	Pike	U. S. B. M.	831
998	Philips Store	Muhlenberg	U. S. B. M.	400
999	Phillipsburg	Marion	L. & N. R. R.	704
1000	Philpot	Daviess	U. S. B. M.	399
1001	Pierce	Breckinridge	L. H. & St. L. R. R.	407
1002	Pierceton	Hopkins	T. C. R. R.	594
1003	Pikeville	Pike	C. & O. R. R.	680
1004	Pilgrim	Martin	U. S. B. M.	617
1005	Pilot Oak	Graves	Weather Bureau	411
1006	Pinckard	Woodford	U. S. B. M.	824
1007	Pine Grove	Clark	C. & O. R. R.	960
1008	Pine Hill	Rockcastle	L. & N. R. R.	966
1009	Pine Knot	McCreary	Q. & C. R. R.	1,410
1010	Pineville	Bell	U. S. B. M.	1,062
1011	Piney	Crittenden	U. S. B. M.	409
1012	Pink	Jessamine	U. S. B. M.	818
1013	Pinkard	Woodford	U. S. B. M.	824
1014	Pisgah	Woodford	U. S. B. M.	863
1015	Pittsburg	Laurel	L. & N. R. R.	1,135
1016	Pleasant Hill	Mercer	U. S. B. M.	932
1017	Pleasant Home	Owen	U. S. B. M.	887
1018	Pleasant Valley	Rockcastle	L. & N. R. R.	1,110
1019	Pleasant View	Whitley	L. & N. R. R.	971
1020	Pleasure Ridge Pk	Jefferson	I. C. R. R.	447
1021	Pleasureville	Henry	L. & N. R. R.	882
1022	Poindexter	Harrison	L. & N. R. R.	717
1023	Point Leavell	Garrard	L. & N. R. R.	884
1024	Pond Creek	Pike	C. & O. R. R.	742
1025	Poole	Webster	U. S. B. M.	499
1026	Potter	Lawrence	C. & O. R. R.	573
1027	Potters Gap	Letcher	U. S. B. M.	1,688
1028	Pound Gap	Letcher	U. S. B. M.	2,512
1029	Poverty	McLean	U. S. B. M.	391
1030	Powers	Daviess	L. H. & St. L. R. R.	362
1031	Pratt	Webster	U. S. B. M.	502
1032	Preachersville	Lincoln	U. S. B. M.	998
1033	Preese	Martin		719
1034	Preston	Bath	C. & O. R. R.	742
1035	Prestonia	Jefferson	U. S. B. M.	511
1036	Prestonsburg	Floyd	L. W. in Big Sandy River	606
1037	Prestonsburg	Floyd	U. S. B. M. C. & O. Station	637
1038	Prewitt	Montgomery	C. & O. R. R.	1,054
1039	Prichard, W. Va.		N. & W. R. R.	569
1040	Princess	Boyd	C. & O. R. R.	632
1041	Princeton	Caldwell	U. S. B. M. R. R. Station	484
1042	Prospect	Jefferson	U. S. B. M.	484
1043	Prosperity	Lawrence	U. S. B. M.	632

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
1044	Providence	Webster	U. S. B. M.	453
1045	Pryors	Graves	I. C. R. R.	420
1046	Pryorsburg	Graves	I. C. R. R.	411
1047	Pulaski	Pulaski	Q. & C. R. R.	1,120
1048	Quality	Butler	U. S. B. M. at P. O.	503
1049	Quarry Switch	Bullitt	L. & N. R. R.	463
1050	Quicksand	Knott	U. S. B. M.	1,700
1051	Quincy	Lewis	L. W. in Ohio River	464
1052	Quincy	Lewis	C. & O. R. R.	543
1053	Quinn	Caldwell	U. S. B. M.	530
1054	Railey	Woodford	S. R. R.	834
1055	Raleigh	Union	L. W. in Ohio River	302
1056	Ralph	Ohio	S. B. M.	430
1057	Rankin	Henderson	L. & N. R. R.	372
1058	Raven	Knott	U. S. B. M.	749
1059	Redbush	Johnson	U. S. B. M.	804
1060	Red Hill	Christian	U. S. B. M.	450
1061	Red Hill	Hardin	I. C. R. R.	751
1062	Red House	Madison	L. & N. R. R.	710
1063	Red Oak	Logan	L. & N. R. R.	595
1064	Red River	Logan	L. & N. R. R.	522
1065	Reed	Henderson	U. S. B. M.	379
1066	Renick	Marion	L. & N. R. R.	927
1067	Repton	Crittenden	U. S. B. M. R. R. Station	485
1068	Republican	Knott	U. S. B. M.	804
1069	Reynolds Station	Ohio	U. S. B. M.	497
1070	Ricedale	Muhlenberg	L. & N. R. R.	387
1071	Richardson	Lawrence	C. & O. R. R.	599
1072	Richardson	Lawrence	L. W. in Big Sandy	549
1073	Richardsville	Warren	U. S. B. M.	686
1074	Richland	Hopkins	U. S. B. M.	431
1075	Richelieu	Logan		590
1076	Richmond	Madison	L. & N. R. R.	926
1077	Rich Pond	Warren	L. & N. R. R.	564
1078	Richwood	Boone	Q. & C. R. R.	924
1079	Riley	Marion	L. & N. R. R.	914
1080	Rineyville	Hardin	I. C. R. R.	808
1081	Riverside	Clark	L. & N. R. R.	645
1082	Riverside	Jefferson	I. C. R. R.	445
1083	Riverside	Warren		552
1084	River Station	Johnson	U. S. B. M.	615
1085	Riverton	Greenup	C. & O. R. R.	534
1086	Roachville	Green	L. W. in Green River	544
1087	Robard	Henderson	U. S. B. M.	425
1088	Robinson	Harrison	L. & N. R. R.	674
1089	Rochester	Butler	U. S. B. M.	451
1090	Rockfield	Warren	L. & N. R. R.	568
1091	Rock Haven	Meade	L. H. & St. L. R. R.	412
1092	Rockhold	Whitley	L. & N. R. R.	955
1093	Rockhouse	Pike	C. & O. R. R.	880
1094	Rockland	Warren	U. S. B. M.	664
1095	Rockport	Ohio	U. S. B. M.	436
1096	Rock Springs	Henderson	U. S. B. M.	486

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
1097	Rock Vale	Breckinridge	L. H. & St. L. R. R.	435
1098	Rocky Hill	Edmonson	L. & N. R. R.	596
1099	Rockhouse	Pike		858
1100	Rodener	Allen		749
1101	Rogers Gap	Scott	Q. & C. R. R.	913
1102	Roosevelt	Breathitt		748
1103	Rosine	Ohio	U. S. B. M.	564
1104	Ross	Campbell	C. & O. R. R.	494
1105	Rosslyn	Powell	U. S. B. M. L. & E. Station	668
1106	Rothwell	Menifee	C. & O. R. R.	993
1107	Rough River	Ohio	Lock 1. Top of wall	381
1108	Roumine	Taylor	Kentucky Geological Survey	784
1109	Rowland	Lincoln	L. & N. R. R.	844
1110	Rowletts	Hart	L. & N. R. R.	610
1111	Roxana	Letcher	L. & E. R. R.	1,039
1112	Rufus	Caldwell	U. S. B. M.	425
1113	Rugless	Lewis	C. & O. R. R.	703
1114	Rumsey	McLean		384
1115	Rush	Boyd	U. S. B. M.	639
1116	Russell	Greenup	C. & O. R. R.	549
1117	Russellville	Logan	L. & N. R. R.	534
1118	Ruth	Breckinridge	L. H. & St. L. R. R.	493
1119	Sacrament	McLean	U. S. B. M.	497
1120	Sadieville	Scott	Q. & C. R. R.	857
1121	Saffell	Franklin	U. S. B. M.	890
1122	Saffells	Anderson	S. R. R.	754
1123	Salmons	Simpson	L. & N. R. R.	677
1124	Salt Lick	Bath	C. & O. R. R.	656
1125	Saltpetre, W. Va.		N. & W. R. R.	584
1126	Salvisa	Mercer	U. S. B. M.	808
1127	Salyersville	Magoffin	L. W. in Licking River	840
1128	Sample	Breckinridge	L. H. & St. L. R. R.	392
1129	Samuel Hill	Bullitt	U. S. B. M.	838
1130	Samuels	Nelson	L. & N. R. R.	652
1131	Sanders	Carroll	L. & N. R. R.	488
1132	Sands, W. Va.		N. & W. R. R.	737
1133	Savage Branch	Boyd	C. & O. R. R.	547
1134	Saxton	Whitley	L. & N. R. R.	966
1135	Sayers	Nelson	L. & N. R. R.	674
1136	Science Hill	Pulaski	Q. & C. R. R.	1,115
1137	Scott	Shelby	U. S. B. M. R. R. Station	744
1138	Scottsburg	Caldwell	U. S. B. M.	521
1139	Scottsville	Allen		762
1140	Scuffletown	Henderson	U. S. B. M.	375
1141	Seatonsville	Jefferson	U. S. B. M.	500
1142	Sebree	Webster	U. S. B. M.	500
1143	Sergent	Letcher	U. S. B. M.	1,222
1144	Shady Grove	Crittenden	U. S. B. M.	426
1145	Shannondale	Fayette	U. S. B. M.	888
1146	Shawhan	Bourbon	L. & N. R. R.	825
1147	Shearer	Madison	L. & N. R. R.	615
1148	Shelby	Boyle	U. S. B. M.	991
1149	Shelby	Pike	C. & O. R. R.	705

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
1150	Shelby Gap	Pike		1,431
1151	Shelby Junction	Jefferson	L. & N. R. R.	696
1152	Shelbyville	Shelby	U. S. B. M. C. H.	760
1153	Shepherdsville	Bullitt	U. S. B. M. C. H.	446
1154	Sheridan	Crittenden		529
1155	Sherman	Grant	Q. & C. R. R.	924
1156	Shively	Jefferson	U. S. B. M.	458
1157	Silver Creek Sta	Madison	L. & N. R. R.	804
1158	Simpsonville	Shelby	U. S. B. M. R. R. Station	796
1159	Sinks	Rockcastle	L. & N. R. R.	906
1160	Skillman	Hancock	L. H. & St. L. R. R.	387
1161	Skylight	Oldham	U. S. B. M.	704
1162	Slaughtersville	Webster	U. S. B. M.	403
1163	Sloans Valley	McCreary	Q. & C. R. R.	912
1164	Smithfield	Henry	L. & N. R. R.	875
1165	Smithland	Livingston	L. W. in Ohio River	286
1166	Smith Mills	Henderson	U. S. B. M.	413
1167	Smith's Grove	Warren	L. & N. R. R.	607
1168	Smyrna	Jefferson	U. S. B. M.	632
1169	Snider	Spencer	L. & N. R. R.	1,004
1170	Soldier	Carter	C. & O. R. R.	950
1171	Somerset	Pulaski	B. M. on Cumberland Hotel	879
1172	Sonora	Hardin	L. & N. R. R.	699
1173	Sorgho	Daviess	U. S. B. M.	389
1174	South Carrollton	Muhlenberg	U. S. B. M.	456
1175	South Columbus	Hickman	M. & O. R. R.	354
1176	South Covington	Kenton	L. & N. R. R.	529
1177	South Elkhorn	Fayette	U. S. B. M.	957
1178	South Fork	Lincoln	Weather Bureau	981
1179	South Hill	Butler	U. S. B. M.	546
1180	South Louisville	Jefferson	L. & N. R. R.	462
1181	South Park	Jefferson	U. S. B. M.	478
1182	South Portsmouth	Greenup	C. & O. R. R.	529
1183	South Ripley	Mason	C. & O. R. R.	507
1184	South Union	Logan	L. & N. R. R.	579
1185	Sparta	Gallatin	L. & N. R. R.	497
1186	Specht	Pike	U. S. B. M.	1,207
1187	Spencer	Montgomery	C. & O. R. R.	783
1188	Spider	Knott	U. S. B. M.	1,059
1189	Spottsville	Henderson	U. S. B. M.	365
1190	Sprigg, W. Va.		N. & W. R. R.	690
1191	Springdale	Jefferson	U. S. B. M.	620
1192	Springdale	Mason	C. & O. R. R.	509
1193	Springfield	Washington	L. & N. R. R.	738
1194	Spring Lick	Grayson	I. C. R. R.	387
1195	Spring Station	Woodford	U. S. B. M.	816
1196	Spurlington	Taylor	L. & N. R. R.	981
1197	St. Charles	Hopkins	U. S. B. M.	427
1198	St. Helens	Lee	U. S. B. M. L. & E. Station	674
1199	St. John	Hardin	Weather Bureau	760
1200	St. Joseph	Daviess	U. S. B. M.	420
1201	St. Mary	Marion	L. & N. R. R.	733
1202	St. Matthews	Jefferson	U. S. B. M.	550

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
1203	St. Vincent	Union	I. C. R. R.	413
1204	Stacey	Perry		824
1205	Stambaugh	Johnson	U. S. G. S.	649
1206	Stamping Ground	Scott	U. S. B. M. R. R. Station	799
1207	Stanford	Lincoln	U. S. B. M. C. H.	912
1208	Stanhope	Webster	U. S. B. M.	468
1209	Stanley	Daviess	U. S. B. M.	385
1210	Stanton	Powell	U. S. B. M. L. & E. Sttaion	662
1211	State Line	Christian	L. & N. R. R.	535
1212	State Line	Whitley	Q. & C. R. R.	1,359
1213	Stedman	Franklin	U. S. B. M. R. R. Station	711
1214	Stephensburg	Hardin	I. C. R. R.	611
1215	Stephensport	Breckinridge	L. W. in Ohio River	340
1216	Stephensport	Breckinridge	L. H. & St. L. R. R.	390
1217	Stepstone	Montgomery	C. & O. R. R.	777
1218	Steubenville	Wayne		887
1219	Stine	Jefferson	L. S. R. R.	484
1220	Stithton	Hardin	I. C. R. R.	686
1221	Stone Coal	Knott	U. S. B. M.	686
1222	Strawberry	Jefferson	L. & N. R. R.	432
1223	Stroud	Muhlenberg	L. & N. R. R.	380
1224	Strunk	McCreary	Q. & C. R. R.	1,397
1225	Sturgis	Union	U. S. B. M. R. R. Station	375
1226	Sullivan	Union	U. S. B. M.	395
1227	Sulphur	Henry	L. & N. R. R.	683
1228	Sulphur Springs	Ohio	U. S. B. M.	418
1229	Summit	Boyd	C. & O. R. R.	664
1230	Summit	Mason	L. & N. R. R.	905
1231	Summit	McCreary	Q. & C. R. R.	1,263
1232	Sunnydale	Ohio	U. S. B. M.	427
1233	Sutherland	Daviess	U. S. B. M.	400
1234	Sutton Knob	Whitley	U. S. B. M.	1,515
1235	Swallowfield	Franklin	U. S. B. M.	527
1236	Sweeney	Garrard	U. S. B. M.	1,024
1237	Switzer	Franklin	U. S. B. M. R. R. Station	735
1238	Tackitt's Mill	Owen	U. S. B. M.	641
1239	Taffy	Ohio	U. S. B. M.	480
1240	Talbott	Bourbon	L. & N. R. R.	808
1241	Tallega	Lee	U. S. B. M. L. & E. Station	689
1242	Talmage	Mercer	U. S. B. M.	821
1243	Tannery	Lewis	C. & O. R. R.	552
1244	Tateville	McCreary	Q. & C. R. R.	877
1245	Taylor Mines	Ohio	U. S. B. M.	500
1246	Taylorsville	Spencer	U. S. B. M. on C. H.	490
1247	Teresita P. O.	Owen	U. S. B. M.	687
1248	Terrapin	Mercer	U. S. B. M.	876
1249	Thacker, W. Va.		N. & W. R. R.	716
1250	The Forks	Pike	C. & O. R. R.	710
1251	Thompson's	Montgomery	C. & O. R. R.	1,037
1252	Thompson	Union	I. C. R. R.	408
1253	Thompsonville	Christian	T. C. R. R.	542
1254	Threlkel	Butler	U. S. B. M.	430
1255	Thurman	Hickman	I. C. R. R.	322

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
1256	Tichenor	McLean	L. & N. R. R.	383
1257	Tilden	Webster	U. S. B. M.	425
1258	Tillie	Letcher		1,266
1259	Tip Top	Hardin	I. C. R. R.	760
1260	Tomahawk	Martin	U. S. G. S.	656
1261	Topeka Crossroads	Union	U. S. B. M.	430
1262	Torchlight	Lawrence	U. S. B. M.	588
1263	Torrent	Wolfe	U. S. B. M. L. & E. Station	939
1264	Tradewater	Hopkins	I. C. R. R.	456
1265	Trammel	Allen		761
1266	Trenton	Todd	L. & N. R. R.	531
1267	Tribune	Crittenden	U. S. B. M.	431
1268	Triplett Tunnel	Carter	C. & O. R. R.	1,002
1269	Troublesome P. O.	Breathitt		831
1270	Troy	Woodford	U. S. B. M.	828
1271	Tucker	Jefferson	S. R. R.	719
1272	Tunnel Hill	Henderson	U. S. B. M.	443
1273	Tunnel Hill	Hardin	L. & N. R. R.	767
1274	Turners	Henry	L. & N. R. R.	740
1275	Twin Tunnels	Muhlenberg	U. S. B. M. L & N. Station	501
1276	Typo	Perry	L. & E. R. R.	840
1277	Tyrone	Anderson	L. W. in Kentucky River	483
1278	Tyrone	Anderson	U. S. B. M.	738
1279	Ulvan	Perry	L. & E. R. R.	951
1280	Uma	Pendleton	L. & N. R. R.	597
1281	Union Mills	Jessamine	U. S. B. M.	939
1282	Uniontown	Union	L. W. in Ohio River	306
1283	Uniontown	Union	I. C. R. R.	354
1284	Upland	McCreary	Q. & C. R. R.	1,253
1285	Upper Bruce	Lewis	C. & O. R. R.	553
1286	Upton	Hardin	L. & N. R. R.	724
1287	Utica	Daviess	U. S. B. M.	417
1288	U. Z.	Letcher	L. & E. R. R.	1,063
1289	Vaden	Oldham	L. & N. R. R.	850
1290	Valley Hill	Washington	L. & N. R. R.	572
1291	Valley Station	Jefferson	U. S. B. M.	452
1292	Vanarsdell	Mercer	U. S. B. M.	788
1293	Vanceburg	Lewis	C. & O. R. R.	523
1294	Vanderburg	Webster	U. S. B. M.	580
1295	Van Lear	Johnson	U. S. G. S.	612
1296	Van Meter	Fayette	L. S. R. R.	880
1297	Veazey	Hopkins	U. S. B. M.	564
1298	Veechdale	Shelby	L. S. R. R.	742
1299	Venters	Pike		775
1300	Verona	Boone	L. & N. R. R.	862
1301	Versailles	Woodford	U. S. B. M.	923
1302	Vest	Knott	U. S. B. M.	1,044
1303	View	Crittenden		441
1304	Vine Grove	Hardin	I. C. R. R.	721
1305	Viola	Graves	I. C. R. R.	400
1306	Virden	Powell	U. S. B. M. L. & E. Station	660
1307	Virgie	Pike	U. S. B. M.	837
1308	Visalia	Kenton	L. W. in Licking River	453

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation.
1309	Waddy	Shelby	S. R. R.	854
1310	Wagon Ford	Crittenden	U. S. B. M.	353
1311	Waitman	Hancock	L. H. & St. L. R. R.	344
1312	Walbridge	Lawrence	U. S. B. M.	588
1313	Wallace	Woodford	L. S. R. R.	814
1314	Walnut	Knott	U. S. B. M.	2,004
1315	Walnut Grove	Caldwell	U. S. B. M.	449
1316	Walnut Hill School	Caldwell	U. S. B. M.	588
1317	Walton	Boone	Q. & C. R. R.	912
1318	Wanamaker	Webster	U. S. B. M.	445
1319	Ward	Pike		703
1320	Wards	Carter	C. & O. R. R.	669
1321	Warfield	Martin	L. W. in Big Sandy	587
1322	Warsaw	Gallatin	L. W. in Ohio River	411
1323	Wasioto	Bell	U. S. B. M. L. & E. Station	1,025
1324	Waterford	Spencer	U. S. B. M.	468
1325	Water Valley	Graves	I. C. R. R.	386
1326	Water Works	Campbell	C. & O. R. R.	498
1327	Waverly	Union	I. C. R. R.	408
1328	Wayland	Floyd	U. S. G. S.	702
1329	Waynesburg	Lincoln	Q. & C. R. R.	1,215
1330	Weaverton	Henderson	I. C. R. R.	380
1331	Webb, W. Va.		N. & W. R. R.	601
1332	Webbville	Lawrence	U. S. B. M.	645
1333	Webster	Breckinridge	L. H. & St. L. R. R.	542
1334	Weir	Muhlenberg	U. S. B. M.	629
1335	Welborn	Muhlenberg	L. & N. R. R.	486
1336	Wellsburg	Bracken	C. & O. R. R.	501
1337	West Clifty	Grayson	I. C. R. R.	631
1338	Westerfield	Ohio	U. S. B. M.	464
1339	West Liberty	Morgan	L. W. in Licking River	742
1340	Weston	Crittenden		353
1341	West Louisville	Daviess	U. S. B. M.	462
1342	West Point	Hardin	U. S. B. M.	441
1343	Westport	Oldham	U. S. B. M.	487
1344	Wetwoods	Jefferson	U. S. B. M.	473
1345	Whalen P. O.	Daviess	U. S. B. M.	432
1346	Wheatcroft	Webster	U. S. B. M.	376
1347	Whick	Breathitt	L. & E. R. R.	776
1348	Whippoorwill	Logan	L. & N. R. R.	539
1349	Whitefield	Bullitt	U. S. B. M.	729
1350	White House	Johnson	C. & O. R. R.	605
1351	White Oak	Pulaski	Q. & C. R. R.	956
1352	White Plains	Hopkins	I. C. R. R.	439
1353	White's Station	Madison	L. & N. R. R.	902
1354	Whitesburg	Letcher	L. & E. R. R.	1,146
1355	White Sulphur	Caldwell	U. S. B. M. R. R. Station	501
1356	White Sulphur	Scott	U. S. B. M.	873
1357	Whitesville	Daviess	U. S. B. M.	506
1358	Whitewood	Green	L. & N. R. R.	570
1359	Whitley	McCreary	Q. & C. R. R.	1,332
1360	Whitney	Scott	Q. & C. R. R.	857
1361	Wiborg	McCreary	Q. & C. R. R.	1,280

Elevation, Above Sea, of Points in Kentucky—Continued.

No.	Place	County	Station	Elevation
1362	Wickliffe	Ballard	I. C. R. R.	322
1363	Wilbur	Lawrence		705
1364	Wildie	Rockcastle	L. & N. R. R.	923
1365	Wilders	Campbell	L. & N. R. R.	492
1366	Wildwood	Allen		764
1367	Willard	Pike	U. S. G. S.	677
1368	Willard	Carter	U. S. B. M.	625
1369	Williamsburg	Whitley	L. & N. R. R.	939
1370	Williamson, W. Va.		N. & W. R. R.	665
1371	Williamstown	Grant	Q. C. R. R.	943
1372	Wilmore	Jessamine	U. S. B. M.	882
1373	Wilson	Henderson	I. C. R. R.	377
1374	Wilson Bridge	Hopkins	U. S. B. M.	372
1375	Wilsonville	Spencer	U. S. B. M.	643
1376	Winchester	Clark	U. S. B. M. L. & E. Station	981
1377	Windom	Jessamine	Q. & C. R. R.	1,032
1378	Wingo	Graves	I. C. R. R.	466
1379	Wolf Lick	Logan	L. & N. R. R.	401
1380	Woodbine	Whitley	L. & N. R. R.	1,080
1381	Woodburn	Warren	L. & N. R. R.	610
1382	Woodbury	Butler		412
1383	Woodland	Hart	L. & N. R. R.	623
1384	Woodlawn	Jefferson	L. & N. R. R.	509
1385	Woodman	Pike	U. S. B. M.	790
1386	Woods	Floyd	U. S. B. M.	643
1387	Woodville	Christian	I. C. R. R.	512
1388	Worthington	Henderson	L. H. & St. L. R. R.	382
1389	Worthington	Jefferson	U. S. B. M.	695
1390	Worthville	Carroll	L. & N. R. R.	478
1391	Wrights	Taylor	L. & N. R. R.	616
1392	Wurtland	Greenup	C. & O. R. R.	539
1393	Wyandotte	Clark	U. S. B. M. L. & E. Station	990
1394	Wyman	McLean	U. S. B. M.	484
1395	Wynn Bridge	Union	U. S. B. M.	364
1396	Wysox	Ohio	U. S. B. M.	401
1397	Yatesville	Lawrence	U. S. B. M.	582
1398	Yeager	Pike	C. & O. R. R.	730
1399	Yerkes	Perry	L. & E. R. R.	823
1400	Youngs H. Bridge	Anderson	S. R. R.	706
1401	Zelda P. O.	Lawrence	U. S. B. M.	567
1402	Zion	Henderson	U. S. B. M.	436
1403	Zoneton	Bullitt	U. S. B. M.	485

CHAPTER XI.

A Revised Bibliography of Petroleum, Natural Gas, Asphalt and Oil Shale in Kentucky.*

Andrews, E. B.

1. Rock oil, its geological relations and distribution: Am. Journ. Sci., 2nd Series, Vol. 32, pp. 85-93, 1861. Reference to Kentucky.

Ashley, George Hall

2. Oil resources of black shales of the eastern United States U. S. Geol. Surv., Bulletin 641. pp. 311-334, Feb. 8, 1917. Reference to black shale of Kentucky.

Ashley, G. H., and Glen, L. C.

3. Geology and Mineral Resources of part of the Cumberland Gap Coal Field, Kentucky—U. S. G. S.; Professional Paper No. 49, 1906, pp. 85, 223.

Bagby, F. H.

4. The South Central Petroleum District. Annual Report of Inspector of Mines of Kentucky, 1895, pp. 294-299. (Wayne, Cumberland, Clinton and Russell Counties, Ky.)

Brown, C. Newton.

4-a. The Big Sandy Valley. U. S. A. Rept. of Chief of Engineers, also, Ann. Rept. Inspector of Mines of Ky., 1901-1902, p. 371. Reference to oil and gas development in Floyd, Pike and Martin Counties, Ky.

Browning, Iley B. (and P. G. Russell).

5. The Coals of Magoffin County, Kentucky Geol. Surv., Series IV, Vol. IV, Part IV. 1917. Discusses oil and gas possibilities.

Bryant, J. Owen

6. The Economic Geology of a Portion of Edmonson and Grayson Counties: Ky. Geol. Surv., Series IV., Vol. II, Part I, 1914, pp. 60-61 (Edition exhausted.)

Burke, W. E.

7. Asphalt Rock in Kentucky: Eng. and Min. Journ., Vol. 75, pp. 969-970, 1 fig., 1903.

Butts, Charles

8. Geology and Mineral Resources of Jefferson County, Ky.: Ky. Geol. Surv., Series IV., Vol. III, Part II. pp. 238-241. 1915 Discusses oil and gas possibilities.

8-A. The Geology of Barren County, Ky., Dept. of Geol. and Forestry of Ky., Series V, Mineral and Forest Resources, Vol. 1, No. 3, 1919.

9. The Mississippian Formations of Western Kentucky: Ky. Geol. Surv. Pub. (The Tar Springs Sandstone—near Cloverport, Ky.), 1917. pp. 103, 104 and 105.

*Jillson, W. R., Revised reprint from Dept. of Geol. and Forestry of Ky., Series V., Mineral and Forest Resources of Ky., Vol. 1, No. 1, Paper No. 3, April, 1919.

Clapp, F. G and others.

10. Petroleum and Natural Gas Resources of Canada: Vol. I, Vol. II, Mines Branch Mem. 291, Ottawa, Can., 1915. Various references to oil and gas sands and production in Kentucky.

Crandall, A. R.

11. Report on the Geology of Whitley County and a Part of Pulaski: Ky. Geol. Surv., Old Series, Vol. C, Part II, The Southeastern Coal Field, pp. 5-6, 1885. Discusses structure. (Edition exhausted.)

Crider, A. F.

12. Geology and Economic Products of the Earlington Quadrangle: Ky. Geol. Surv., Series IV, Vol. II, Part I, pp. 99, 1914. (Edition exhausted.)

13. Report on the Geology and Mineral Resources of the Dawson Springs Quadrangle: Ky. Geol. Surv., Series IV, Vol. II, Part I, pp. 63, 1914. (Edition exhausted.)

14. Economic Geology of the Tell City and Owensboro Quadrangles: Ky. Geol. Surv., Series IV, Vol. I, Part I, pp. 298-302, 1913. Discusses oil and gas possibilities.

Crump, M. H.

15. Kentucky Rock Asphalt: Ky. Geol. Surv., Series IV, Vol. I, Part II, pp. 1053-1065, 1913.

Daddow, S H.

16. Coal, Iron and Oil, or the Practical American Miner, 808 pp, map, Pottsville, 1886. Reference to Kentucky.

Davie, W. J.

17. The Resources and Condition of the Commonwealth of Kentucky: Ky. State Bureau Agr., Hort., and Stat. pp. 76. 1877. Refers to areal geology of Livingston, Crittenden, Lyon, Caldwell, Trigg, Christian, Todd, Logan, Simpson, Warren, Allen, Monroe, Barren, Butler and Edmonson Counties, Ky.

Eldridge, Geo. H.

18. Bituminous and Asphalt Rocks of the United States: U. S. Geol. Surv., 22nd Annual Report, pp. 211-452. 1900-1901. Contains an account of the bituminous sandstone in Kentucky compiled from a report made by S. D. Averitt.

Fischer, Moritz

19. Natural Gas in Kentucky: U. S. Geol. Surv., Mineral Resources, 1887, pp. 489-492, 1888.

20. Oil Field of Barren County: Eng. and Mining Journ., Vol. 49, pp. 197-198, 1890.

Foerste, August F.

21. Age of the Cincinnati Anticlinal: Am. Geologist, Vol. 7, pp. 97-109, 1891.

22. Cincinnati Anticline in Southern Kentucky: Am. Geologist, Vol. 30, pp. 359-369, 1 pl., Dec., 1902. And reprint.

23 Further Studies on the History of the Cincinnati Anticline: Abstrata, Science, New Series, Vol. II, pp. 145, 1900.

24. Oil, Gas and Asphalt Rock in Meade and Breckinridge Counties: Kentucky Geol. Surv., Rept. Progress for 1908-9, pp. 69-87, 1910.

Fohs, F. Julius

25. Oil and Gas Possibilities of Kentucky: Am. Inst. of Mining Eng., Bulletin No. 9, pp. 621-628, 1915. Transactions, Vol. 51, pp. 644-956, 2 figs., 1916

26. Coals of the Region Drained by the Quicksand Creeks, in Breathitt, Floyd and Knott Counties: Kentucky Geol. Surv., Bull. 18, Serial No. 25, pp. 12-13, 1912. Oil and gas structure in parts of Breathitt, Knott and Floyd Counties, Ky.

Fuller, Myron L.

27. Appalachian Oil Field: Geol. Soc. of America Bulletin, Vol. 27, No. 3, pp. 617-654, 5 figs., Sept. 30, 1917. Reference to Kentucky.

Gardner, James H.

28. A Stratigraphic Disturbance through the Ohio Valley, running from the Appalachian Plateau in Pennsylvania, to the Ozark Mountains in Missouri. Bull. Geol. Soc. Amer., Vol. 26, pp. 477-483. 1 Fig. Map. 1916. Describes the Kentucky River-Irvine-Paint Creek Fault, etc.

29. Kentucky as an Oil State: Science, New Series, Vol. 46, pp. 279-280, Sept. 21, 1917.

Glenn, L. C.

30. A Geological Reconnoissance of the Tradewater River Region with Special Reference to the Coal Beds: Kentucky Geol. Surv., Bull. 17, Serial No. 24, 1912, pp. 65-75. Discusses general structural relations of this district including description of the Rough Creek Fault Zone.

Glenn, L. C., and Ashley, G. H. (See Ashley, G. H.)

31. Geology and Mineral Resources of Part of the Cumberland Gap Coal Field, Kentucky—U. S. G. S. Professional Paper No. 49, 1906, pp. 85, 223. (Edition exhausted).

Hitchcock, C. H.

32. Petroleum in North America: Geol. Mag. Vol. 4, pp. 34-37, 1867. Refers to oil in Barren County and is early suggestion of relation of structure to accumulation of petroleum.

Hodge, J. M.

33. Geology of the Lower North Fork, Middle and South Forks, Kentucky River: Ky. Geol. Surv., Old Series, Vol. C, Part II. The Southeastern coal field, pp. 60, 62, 63, 108, 111-112. Discusses Geol. structure and natural gas. (Edition exhausted.)

Hoeing, J. B.

34. Oil and Gas: Kentucky Geol. Surv., Series IV, Vol. I, Part I, pp. 21-61, 1913.

35. Oil and Gas Sands of Kentucky: Kentucky Geol. Surv., Bulletin No. 1, 233 pp., 10 pls., 3 maps, 1905. (Edition exhausted.)

Hutchinson, F. M.

36. Preliminary Report on Oil and Gas Possibilities in the Newburg, Calhoun, Central City and Madisonville Quadrangle, including a discussion of the primary factors governing such accumulations: Ky. Geol. Surv., Report of Progress for 1908-9, pp. 85-92, 1910.
37. Geology and Coals of the Central City, Madisonville, Calhoun and Newburg Quadrangles: Ky. Geol. Surv., Bull. 19, Serial No. 26, 1912. Discusses structural geology and well records.

Jillson, Willard R.

38. The Used and Unused Natural Gas Fields of Eastern Kentucky and Their Relation to the Present and Future Public Service Demands: Louisville Herald, Feb. 16, 1919. Also, The Oil World, Vol. 2, No. 40, March 1, 1919.
39. A Bibliography of Kentucky Petroleum, Natural Gas, Asphalt and Oil Shale: Dept. Geol. and Forestry of Kentucky, Series V. Mineral and Forest Resources of Kentucky, Vol. 1, No. 1, Paper No. 3, 1919.
40. The Used and Unused Natural Gas Fields of Eastern Kentucky and Their Relation to the Present and Future Public Service Demands. (Revised to April 1, 1919): Dept. of Geol. and Forestry of Ky., Series V, Mineral and Forest Resources of Kentucky, Vol. 1, No. 1, Paper No. 2, 1919.
41. The Migration of the Headwaters Divide of Right Middle Creek, Floyd County, Kentucky: Am. Journ. Sc., Vol. XLVII, Jan., 1919, pp. 60-64, also reprint in Dept. of Geol. and Forestry of Kentucky, Series V., Mineral and Forest Resources, Vol. 1, No. 2, Paper No. 7, 1919. Reference to oil and gas structure.
42. Sketch of the Development of the Oil and Gas Industry in Kentucky During the Past Century. (1819-1919); Dept. of Geol. and Forestry of Ky., Series V, Mineral and Forest Resources of Kentucky, Vol. 1, No. 1, Paper No. 1, 1919.
43. The Oil and Gas Resources of Kentucky: Dept. of Geol. and Forestry of Ky., Series V, Bull. No. 1, 1919.
44. Structural Deformation and Its Relation to Proven Oil and Gas Accumulation in Eastern Kentucky: Dept. of Geol. and Forestry of Ky., Series V, Mineral and Forest Resources of Kentucky, Vol. 1, No. 2, Paper No. 1, 1919.
45. The Status of the Mauch Chunk in Southeastern Kentucky as a Producer of Petroleum and Natural Gas: Dept. of Geol. and Forestry of Kentucky, Series V, Mineral and Forest Resources of Kentucky, Vol. 1, No. 2, Paper No. 4, 1919.
46. The Oil and Gas Industry of Kentucky: The Encyclopedia Americana, New Edition, Vol. 16, page—, 1919. Signed article.
47. The New Oil and Gas Pools of Allen County: Dept. of Geol. and Forestry of Ky., Series V, Mineral and Forest Resources of Kentucky, Vol. 1, No. 2, Paper No. 9, 1919. (Allen County

Map.) Also, The Oil World (Lexington, Ky.), Vol. 3, No. 11, pp. 2, 3, 6 and 7, Aug. 16, 1919. Also, abstracted, The Courier-Journal (Louisville, Ky.), Vol. CXXXI, New Series, No. 18, 491. Section 1, Part 3 (4 illustrations), Sunday, Aug. 17, 1919. Also, National Petroleum News (Cleveland, O.), Oct. 1, 1919, pp. 67-76, one map.

48. The Geology and the Coals of Stinking Creek, Knox County, Ky., (with James M. Hodge): Dept. of Geol. and Forestry of Ky., Series V, Bull. No. 3, 1919. Discusses oil and gas structure and results of past drilling.

49. The Big Sinking Oil Pool: Dept. of Geol. and Forestry of Ky., Series V, Mineral and Forest Resources of Ky., Vol. 2, No. 1, 1920. (In Press.)

50. The Gainesville Oil Pool: Dept. of Geol. and Forestry of Ky., Series V, Mineral and Forest Resources of Kentucky, Vol. 2, No. 1, 1920 (In Press.)

51. The Oil and Gas Geology of Breathitt and Knott Counties: Dept. of Geol. and Forestry of Ky., Series V, Mineral and Forest Resources of Kentucky, Vol. 1, No. 3, Paper No. 5, 1919. (Structural Maps.)

52. The Oil and Gas Geology of Johnson and Magoffin Counties: Dept. of Geol. and Forestry of Ky., Series V, Mineral and Forest Resources of Kentucky, Vol. 2, No. 1,1920. (In Press.)

53. The 1919 Oil Output in Kentucky. Petroleum (Steger Bldg., Chicago, Ill.) Vol. VII, No. 3, p. 154, July, 1919.

54. The Geology of the Oil and Gas Pools of Kentucky. Am. Inst. of Mining and Metal. Engineers. Bull. —, p —, (In Press).

55. The Weir Sand—a Newly recognized Oil Horizon in Eastern Kentucky. Dept. of Geology and Forestry of Kentucky, Series V, Mineral and Forest Resources of Kentucky, Vol. 1, No. 3, 1919.

56. Pay Oil Sands of Eastern Kentucky. Dept. of Geology and Forestry of Kentucky, Series V, The Mineral and Forest Resources of Kentucky, Vol. 1, No. 3, 1919.

57. The Re-Born Oil Fields of Kentucky, Kentucky State Historical Soc., The Register, Vol. 17, No. 52. (Map and Illustrations.) Also Louisville Courier-Journal, Sunday Magazine Section, Vol. CXXXI, New Series No. 18,554. pp. 8, 9, 14 and 15. Twelve illustrations in colors, Oct. 19, 1919.

58. The New Oil and Gas Pools of Warren County, Ky., Dept. of Geology and Forestry of Kentucky, Series V., The Mineral and Forest Resources of Kentucky, Vol. 1, No. 3, 1919.

59. Kentucky Petroleum—Its History and Present Status. Kentucky State Historical Society, The Register ,Vol. 17, No. 51, pp. 45-50, Sept., 1919.

59-A. The Oil and Gas Geology of Grayson County, Kentucky; Dept. of Geology and Forestry of Kentucky, Series V, Mineral and Forest Resources of Ky., Vol. 1, No. 3, 1919.

Johnson, R. H., and Huntley, L. G.

60. Principles of Oil and Gas Production: John Wiley and Sons, N. Y. City. 1916. Isolated References to Kentucky Oil Geology and Production.

Killebrew, J. B.

61. Geology and Topography of the oil region of Tennessee, with some account of the Oil Springs and Wells: Am. Assoc. Adv. Sci. Proc., Vol. 26, pp. 266-277. 1878. Refers to Summer County, Tennessee, which joins Allen and Simpson on the south as having oil shows.

Lane, Alfred C.

62. Report on Certain Lands Leased for Oil and Gas near Cannel City, Morgan County, Kentucky: Private publication, 12 pp., Lansing, 1902.

Lee, Wallace

63. Geology of the Kentucky Part of the Shawneetown Quadrangle (Union County), Ky. Geol. Surv., Pub. 1916, pp. 55-56. References to oil and gas

Lesley, Joseph P.

64. On the Mode of Existence of the Petroleum in the Eastern Coal of Kentucky, and Description of Associated Formation: Am. Phil. Soc., Proc., Vol. 10, pp. 33-68, 188-191. 1869

Linney, W. M.

65. Report on the Geology of Bath and Fleming Counties: Ky. Geol. Survey, 1886, pp. 76-77. (Edition exhausted.)

Loughridge, R. H.

66. Geology of Clinton County: Ky. Geol. Surv., 1890, pp. 28-29.

67. The Paducah Well Bored to a Depth of 1250 Feet, Shows An Immense Faulting of Paleozoic Rocks: Ky. Geol. Surv., Vol. F. Report on Jackson Purchase Region, Appendix III, pp. 321-326. One cross section map. 1888. (Edition exhausted.)

Mather, W. W.

68. Report on the Geological Reconnaissance of Kentucky, made in 1838. (First preliminary. First geological work ever done in Kentucky prior to establishment of Ky. Geol. Surv.), 1839. Executive document, 1839. (Edition exhausted.)

Mather, K. F., and Shaw, E. W.

69. The Oil Pools of Allen County, Ky., U. S. G. S., Bull. 688.

McCallie, S W.

70. Barbourville Oil Field, The: Eng. and Mining Journ., Vol. 76, pp. 12-13. 1903.

Miller, Arthur M.

71. Antiquity of the Cincinnati Island: Science.

72. Evidence of the Former Connection Between the Eastern and Western Coal Fields Across Central Kentucky: Geol. Soc. Am. Bulletin, Vol. 20, pp. 621-624, 1 fig. (map) and reprint, 1908. Abstract, Science, New Series, Vol. 29, p. 624, April 16, 1909.

73. Evidence in North-Central Kentucky: Geol. Soc. Am. Bulletin, Vol. 27, No. 1, pp. 101-104, March 30, 1916.

74. Hypothesis of a Cincinnati Silurian Island: Am. Geol., Vol. 22, pp. 78-85, 1895. (Edition exhausted.)

75. Table of Geological Formations for Kentucky: Univ. Book Store, Lexington, Kentucky, p. 7, 1917.

76. The Geology of Kentucky: Dept. of Geol. and Forestry of Kentucky, Series V, Bulletin No. 2, 1919. Part II.

76-a. The Geology of Allen County, Ky. Dept. of Geol. and Forestry of Ky. Series V, Mineral and Forest Resources of Ky. Vol. 1, No. 3, 1919.

Morse, W. C., and Foerste, A. F.

77. The Waverlian Formations of East-Central Ky.: Ky. Geol. Surv., Series III, Bull. No. 16, pp. 71-76. 1912.

Munn, M. J.

78. Campton Oil Pool: U. S. Geol. Surv., Bulletin No. 471, pp. 9-17, 2 pls., 1912. (Maps and Sections.)

79. Menifee Gas Field and the Ragland Oil Field, Kentucky: U. S. Geol. Surv., Bulletin No. 531, 20 pp., 4 pls. (maps and sections), 1913.

80. Oil and Gas Development in Knox County, Kentucky: U. S. Geol. Surv., Bulletin No. 471, pp. 18-29, 2 pls. (maps and sections), 1912.

81. Oil and Gas Fields of Eastern and South-Central Kentucky: Kentucky Geol. Surv., Report of Progress, 1908-09, pp. 92-94, 1910.

82. Reconnaissance of Oil and Gas Fields in Wayne and McCreary Counties: U. S. Geol. Surv., Bulletin No. 579, 105 pp., 6 pls., 6 figs., 1914; also Journ. of Washington Acad. of Science, Vol. 15, 1915.

Newberry, J. W.

83. Geology of the Oil Regions of the United States: Am. Nat., Vol. 10, pp. 316-317, 1876. Reference to Kentucky.

84. Mineral Oil Prospectus of the Indian Creek and Jack's Knob, Cumberland and Clinton Counties, Kentucky, coal, salt, oil, etc., company, with a geological report on the lands: 20 pp., Pub. in Cincinnati, 1866.

Northrup, J. D.

85. Asphalt, Related Bitumens and Bituminous Rock: U. S. Geol. Surv., Mineral Resources, Part 2, No. 18, 21 pp., 1917.

Norwood, C. J.

86. Oil and Gas—Report of Progress of the Survey, 1910-1911: Ky. Geol. Surv., 1912, pp. 9-10.
87. Oil and Natural Gas—Report of Progress of the Survey, 1908-1909: Ky. Geol. Surv., 1910, pp. 7-10.
88. Asphalt Rock. (Kentucky's Mineral Wealth). Annual Report of Inspector of Mines of Kentucky, 1895, p. 289.
89. Petroleum. (Kentucky's Mineral Wealth). Annual Report of Inspector of Mines of Kentucky, 1895, p. 290.
90. Introduction to (The South-Central Petroleum District). Annual Report of Inspector of Mines of Kentucky, 1895, p. 293.

Orton, Edward, Sr.

91. New Horizons of Oil and Gas in the Mississippi River Valley: Abstract, Am. Assoc. Adv. Sci., Proc., Vol. 37, pp. 181-182, 1889.
92. Petroleum, Natural Gas and Asphalt Rock in Western Kentucky: Ky. Geol. Surv., 233 pp., map, April, 1891. (Edition exhausted.)

Owen, David Dale

93. Tar Springs, Breckinridge County: Ky. Geol. Surv., Old Series, Vol. II. (Second Geol. Report), 1857, pp. 87-88. Location. (Edition exhausted.)
94. Tar (Mineral) or Pitch from Edmonson County: Geol. Surv., Old Series, Vol. I. (First Geol. Rept.), 1857, pp. 166-167. Analysis. (Edition exhausted.)
95. Tar Spring, Breckinridge County, Tar Creek: Ky. Geol. Surv., Old Series, Vol. I. (First Geol. Rept.), 1857, pp. 174. (Edition exhausted.)
96. Petroleum on Oil Springs Branch: In report of the Geological Survey in Kentucky, Old Series, Vol. 1, pp. 210, 1856. (Edition exhausted.)
97. Petroleum on Crocus Creek, Cumberland River: In Third Report Geo. Surv. of Kentucky, Old Series, Vol. III, pp. 151, 1857. (Edition exhausted).

Peckham, S. F.

98. Report on the production, technology, and uses of Petroleum and its products—Kentucky and Tennessee: U. S. Tenth Census, 1880, Vol. 10, pp. 24-25, map. Oil districts of Kentucky and Tennessee, 1884. Lists Kentucky Oil Spring Counties and discusses oil gravity and production horizon.

Pemberton, J. R.

99. A Resume of the Past Year's Development in Kentucky from a Geologic Standpoint: Bull. Am. Assn. of Petrol. Geologists, Vol. II, 1918, pp. 38-52.

Peter, Robt.

100. The Composition of Petroleum. Two Analyses: Ky. Geol. Surv., Chem. Analyses A, Part III, pp. 66-68, 1888. (Edition exhausted.)

101. Bitumen or Mineral Pitch. Breckinridge and Edmonson Counties: Ky. Geol. Surv., Old Series, Vol. II (Second Chem. Rept.), 1857, pp. 138, 161. Two Chem. Analyses. (Edition exhausted.)

Phalen, W. C.

102. Description of the Kenova Quadrangle: U. S. Geol. Surv., Kentucky, West Virginia, Ohio. Geol. Atlas, Kenova folio (No. 184), 16 pp., 4 pls. (maps and sections), 13 figs., 1912. Abstract, Wash. Acad. Sci. Journ., Vol. 3, No. 17, p. 455, Oct. 19, 1913

103. Economic Geology of the Kenova Quadrangle—Kentucky, Ohio and West Virginia: U. S. Geol. Surv., Bulletin No. 349, 158 pp., 6 p!s., 21 figs., 1908.

Proctor, John R.

104. Preliminary Map of Kentucky, scale 20 miles to 1 inch, in pocket cover. Kentucky Geol. Surv., 1891. Accompanied Prof. Orton's report on petroleum, gas and asphalt rock. (Edition exhausted.)

Rhodes, E. O.

105. The Paint Creek Uplift. Dept. of Geol. and Forestry of Kentucky. Series V., Mineral and Forest Resources of Kentucky. Vol. 1, No. 3, Paper No. 4, 1919.

Russell, Philip G.

106. The Coals of Sexton Creek and the Tributaries of South Fork on the Right Between the Mouth of Red Bird Creek and the Mouth of Sexton Creek: Ky. Geol. Surv., Series IV, Vol. IV, Part III, pp. 203-205, 1918. Discusses oil and gas structure and possibilities.

Russell, P. G., and Browning, I. B. (See Browning, I. B.)

107. The Coals and Structure of Magoffin County: Ky. Geol. Surv., Series IV, Vol. IV, Part IV, 1917.

Safford, James M.

108. Note on the Geological Position of Petroleum Reservoirs in Southern Kentucky and in Tennessee: American Journal Sci., 2nd Series, Vol. 42, pp. 104-107, 1866.

Shaler, N. S.

109. Petroleum: Kentucky Geol. Surv., Bul'etin No. 1, pp. 5-12, 1887. (Edition exhausted.)

110. (No title.) Disassociated Notes on Kentucky Oil Deposits and Oil Shale Covering Various Counties: Ky. Geol. Surv., New Series, Reports of Progress, Vol. III, 1877, pp. 107, 108, 109, 171-173, 341, 386, 387, 388. (Edition exhausted.)

Shaw, E. W.

111. Irvine Oil Field: U. S. Geol. Surv., Bulletin No. 661 D—191 pp., 3 pls. (two of them maps), 7 figs., 917.

Shaw, E. W., and Mather, K. F.

112. The Oil Fields of Allen County, Kentucky. U. S. G. S., Bull. 688, Ten Plates and Ten Figures. 1919.

St. Clair, Stuart.

113. The Irvine Oil District: Dept. of Geol. and Forestry of Ky., Series V, Resources of Kentucky, Vol. 1, Paper No. 2, 1919. (In press.)

Steele, G. D.

114. Mining of Kentucky Rock Asphalt and Construction of Asphalt—Macadam Roads; Better Roads and Better Streets. (Publisher unknown). Vol. 5, No. 5, pp. 15-17, 1915.

Wescott, H. P.

115. Handbook of Casing Head Gas, Metric Metal Works, Erie, Pa., 1918.

116. Handbook of Natural Gas, Metric Metal Works, Erie, Pa., 1915. Reference to Kentucky.

117. Measurement of Gas by Orifice Meter, Metric Metal Works, Erie, Pa., 1918. Reference to Kentucky.

Wrigley, Henry E.

118. Geography of Petroleum, Geology of Petroleum: Second Pennsylvanian Geol. Surv., Report J, special on petroleum of Pennsylvania, pp. 15-40, 41-46, pls. maps, 1871. Reference to Kentucky.

Wyer, S. S.

119. Natural Gas, Its Production, Service and Conservation: Smithsonian Inst., Bulletin 102, Part 7, 1918. Reference to Martin County Gas Fields.

APPENDIX.

PART I.

STATUTE REGULATING CONTROL OF PETROLEUM, NATURAL GAS AND SALT-WATER WELLS.

(Chap. 100, Act of May 14, 1892.)

§ 3910. Person not using well must close it so as to prevent waste. That from and after the passage of this act, any person or corporation, and each and every one of them, in possession, whether as owner, lessee, agent or manager, of any well in which petroleum, natural gas or salt-water has been found, shall, unless said product is sooner utilized, within a reasonable time, not, however, exceeding three months from the completion of said well, in order to prevent said product wasting by escape, shut in and confine the same in said well until such time as it shall be utilized; Provided, however, That this section shall not apply to gas escaping from any well while it is being operated as an oil well or while it is used for fresh or mineral water.

§ 3911. How abandoned wells are to be closed. That whenever any well shall have been put down for the purpose of drilling, or exploring for oil, gas, or salt water, upon abandoning or ceasing to operate the same, the person or corporation in possession as aforesaid shall, for the purpose of excluding all fresh water from the gas-bearing rock, and before drawing the casing, fill up the well with sand or rock sediment to a depth of at least twenty feet above the rock which holds the oil, gas or salt water, and drive a round, seasoned wooden plug, at least three feet in length, equal in diameter to the diameter of the well below the casing, to a point at least five feet below the bottom of the casing; and immediately after drawing the casing, shall drive a round, seasoned wooden plug at a point just below where the lower end of the casing rests, which plug shall be at least three feet in length,

tapering in form, and of the same diameter, at the distance of eighteen inches from the smaller end, as the diameter of the hole below the point at which it is to be driven. After the plug has been properly driven, there shall be filled on top of the same, sand or rock sediment to the depth of at least five feet.

§ 3912. Penalty for violation of provision of this law. Any person or corporation who shall violate any of the provisions of sections 3910 or 3911, shall be liable to a penalty of one hundred dollars for each and every violation thereof, and to the further penalty of one hundred dollars for each thirty days during which said violation shall continue; and all such penalties shall be recovered, with cost of suit, in a civil action or actions in the name of the State, for the use of the county in which the well shall be located. (See salt and saltpetre works, sec. 4359.)

§ 3913. Who, besides owner, may close abandoned well. Whenever any person or corporation in possession of any well in which oil, gas or salt water has been found, shall fail to comply with the provisions of section 3910, any person or corporation lawfully in possession of lands situate adjacent to or in the neighborhood of said well, may enter upon the lands upon which said well is situated, and take possession of said well from which oil, gas or salt water is allowed to escape or waste in violation of said section 3910, and tube and pack said well, and shut in said oil, gas or salt water, and may maintain a civil action in any court of this State against the owner, lessee, agent or manager of said well, and each and every one of them, jointly and severally, to recover the cost thereof. This shall be in addition to the penalties provided by section 3912.

§ 3914. Person, not owner, closing well may recover costs of owner. Whenever any person or corporation shall abandon any well, and shall fail to comply with section 3911, any person or corporation lawfully in possession of lands adjacent to or in the neighborhood of said well, may enter upon the land upon which said well is situated, and take possession of said well, and plug the same in the manner provided by section 3911, and may maintain a civil action in any court of this State against the owner or person abandoning said well, and every one of them, jointly and severally, to recover the cost thereof.

This shall be in addition to the penalties provided by section 3912: Provided, This section shall not apply to persons owning the lands on which said well or wells are situated and drilled by other parties; and in case the person or corporation drilling said well or wells is insolvent, then, in that event, any person or corporation in possession of lands adjacent to or in the neighborhood of said well or wells, may enter upon the land upon which said well or wells are situated, and take possession of said well or wells, and plug the same in the manner provided for in section 3911, at their own expense.

§ 3914a. Abandoned oil or gas well must be closed—penalty. It shall be unlawful for any person or persons, corporations or companies to abandon any oil or gas wells, either dry or producing, in this Commonwealth, or to remove casings therefrom whether same be either oil or gas, either producing or dry, or for any cause abandon said well or wells without first plugging same in a secure manner by placing a plug of pine, poplar or some other material which will prevent said well from becoming flooded, said plug to be placed above the oil-producing sand or sands, and filled in above for the distance of seven feet with sediment or clay and placing upon same another plug of similar material as that of the first and also placing about ten feet below the said casing another plug of like material as above referred to, seven feet of sediment or clay, and then another plug, all plugs to be securely driven in so that no water can pass the same, before the casing is removed.

Any person or persons, corporations or companies refusing or failing to comply with the foregoing provisions as provided for in section 1 herein, shall, on conviction, be fined in any one sum not less than one hundred dollars, or not more than one thousand dollars, in the discretion of the jury.

All acts or parts of acts in conflict herewith are hereby repealed.

PART II.

Kentucky Form.

OIL AND GAS LEASE.

AGREEMENT, Made and entered into the.................................. day of ....191..... by and between .... of ....Party of the First Part, hereinafter called Lessor (whether one or more) and .... Party of the Second Part, Lessee:

WITNESSETH, That the said Lessor, for and in consideration of .... Dollars, cash in hand paid, receipt of which is hereby acknowledged, and of the covenants and agreements hereinafter contained on the part of Lessee, to be paid, kept and performed, has granted, demised, leased and let, and by these presents does grant, demise lease and let unto the said Lessee, for the sole and only purpose of mining and operating for oil and gas, and laying pipe lines, and building tanks, powers, stations and structures thereon to produce, save and take care of said products, all that certain tract of land situate in the County of.. State of Kentucky, on the waters of.. bounded and described as follows:

On the North by the lands of..

On the East by the lands of..

On the South by the lands of..

On the West by the lands of..

containing .... acres, more or less, and hereby releasing and waiving all right under and by virtue of the Homestead Exemption Laws of this State in and to said land.

It is agreed that this lease shall remain in force for a term of five years from date, and as long thereafter as oil or gas, or either of them, is produced from said land by the Lessee.

In consideration of the premises the said Lessee covenants and agrees:

1st. To deliver to the credit of Lessor, free of cost, into tanks or in the pipe line to which he may connect his wells, the equal one-eighth part of all oil produced and saved from the leased premises.

2nd. To pay the Lessor Two Hundred Dollars each year, payable quarterly in advance, for the gas from each well where gas only is found, while the same is being used off the premises, and Lessor to have gas free of cost from any such well for all stoves and all inside lights in the principal dwelling house on said land during the same time by making his own connections with the wells at his own risk and expense.

3rd. To pay Lessor for gas produced from any oil well and used off the premises at the rate of Ten Dollars per year, for the time during which such gas shall be used, said payments to be made each three month in advance.

4th. If the Lessee shall operate any such well for casing-head gasoline, then the Lessor shall receive as royalty thereon one-eighth (1-8) part of the market value in the field of the casing-head gasoline so saved, in addition to the royalty to which he may be entitled from the oil produced from any such well.

If no well be commenced on said land on or before the .... day of .... 191..... this lease shall terminate as to both parties, unless the Lessee, on or before that date, shall pay or tender to .... in the manner hereinafter provided, the sum of.. DOLLARS, which shall operate as a rental and cover the privilege of deferring the commencement of a well for ....months from said date. In like manner, and upon like payments or tenders, the commencement of a well may be further deferred for like period of the same number of months successively. And it is understood and agreed that the consideration first recited herein, the down payment, covers not only the privileges granted to the date when the said first rental is payable as aforesaid, but also the Lessee's option of extending that period as aforesaid, and any and all other rights conferred.

All rentals or money due hereunder shall be paid by Lessee's check, mailed, postage prepaid, to.............................. at .... or to ....Bank of ....for the credit of .... on or before the date any such rental shall become payable; said Bank, by a power irrevocable, is hereby made the agent of Lessor to accept all rentals paid hereunder, and the same shall continue as the depository of such

rentals during the life of this lease, regardless of changes in the ownership of said land or said rental.

If said lessor owns a less interest in the above described land than the entire and undivided fee simple estate therein, then the royalties and rentals herein provided shall be paid the lessor only in the proportion which his interest bears to the whole and undivided fee.

Lessee shall have the right to use, free of cost, gas, oil and water produced on said land for its operation thereon, except water from wells of lessor.

When requested by lessor, lessee shall bury its pipe lines below plow depth in cultivated portions of land.

No well shall be drillled nearer than 200 feet of the house or barn now on said premises, without written consent of the lessor.

Lessee shall pay damages caused by its operations to growing crops on said land.

Lessee shall have the right at any time to remove all machinery and fixtures placed on said premises, including the right to draw and remove casing.

If the estate of either party hereto is assigned, and the privilege of assigning in whole or in part is expressly allowed—the covenants hereof shall extend to their heirs, executors, administrators, successors or assigns, but no change in the ownership of the land or assignment of rentals or royalties shall be binding on the lessee until after the lessee has been furnished with a written transfer or assignment or a true copy thereof; and it is hereby agreed in the event this lease shall be assigned as to a part or as to parts of the above described lands and the assignee or assignees of such part or parts shall fail or make default in the payment of the proportionate part of the rents due from him or them, such default shall not operate to defeat or affect this lease in so far as it covers a part or parts of said lands upon which the said lessee or any assignee thereof shall make due payment of said rental.

Lessor hereby warrants and agrees to defend the title to the lands herein described, and agrees that the lessee shall have the right at any time to redeem for lessor, by payment, any mortgages, taxes or any other liens on the above described lands, in the event of default

of payment by lessor, and be subrogated to the rights of the holder thereof.

In witness whereof, the parties have set their hands and seals this the day and year first above written.

WITNESS ....

....

....

....

....

(ACKNOWLEDGMENT TO THE LEASE)

STATE OF KENTUCKY, } ss.
County of.. }

County Clerk,
I,..Notary Public, in and for said County and State, do certify that this instrument of writing from..and wife.. was this day produced to me in my county by the parties and acknowledged by said.. and ...., his wife, to be their act and deed respectively.

Given under my hand and seal of office, this .... day of.. 191.....

County Clerk.
....Notary Public.
By ....Deputy Clerk.
My commission expires....................day of.................... 191.....

ASSIGNMENT.

KNOW ALL MEN BY THESE PRESENTS:

That ....of .... State of ....the within named grant..... in consideration of the sum of.. Dollars to....................in hand paid, the receipt whereof is hereby acknowledged, do...............hereby sell, assign, transfer, set over and convey unto..heirs, and assigns, the within grant, TO HAVE AND TO HOLD THE SAME FOREVER, subject nevertheless, to the conditions therein contained.

IN WITNESS WHEREOF The said grant.....ha.....hereunto set..........hand.....this....................day of.. 191.....

ACKNOWLEDGMENT TO THE ASSIGNMENT.

I,..............................Notary Public, in and for said County and State, do certify that this instrument of writing from..............................and wife.............................. was this day produced to me in my county by the parties and acknowledged by said.............................. and ...., his wife, to be their act and deed respectively.

Given under my hand and seal of office, this .... day of.............................. 191.....

..............................Notary Public.

My commission expires..............day of.............. 191......

(Author's Note—This is one of the most widely used lease forms in Kentucky).

PART III.

Kentucky Form.

OIL AND GAS DEED.

THIS AGREEMENT AND CONTRACT entered into between County of..............State of..............the grantors, party of the first part and..............................heirs and assigns party of the second part, the grantee.

WITNESSETH, That the party of the first part in consideration of..............................dollars paid by the party of the second part, the receipt of payment of which is acknowledged, do..............hereby grant and convey unto the party of the second part, his heirs and assigns forever the ....part of all the oil and gas in and underlying or produced from the following described piece or parcel of land together with the right and privilege of the land for oil and gas and asphalt, which land is situated in ....County of..................State of...................

Bounded and described as follows:

On the North by the lands of now or formerly

On the East by the lands of now or formerly

On the South by the lands of now or formerly

On the West by the lands of now or formerly

Containing..................acres, more or less, subject to any valid lease for oil and gas now on the land while the same remain in force, but hereby granting and conveying the ....part of all oil and gas royalty and rents reserved in and under said land, with covenants of General

Warranty, and to execute such other and further assurances of title as counsel may desire, without expense to the party of the first part.

Dated the..................day of.......................................191.....

Witness the following signature and seals:

....

....

....Seal

NOTARY'S CERTIFICATE.

STATE OF KENTUCKY, }
County of.......................................} ss.

I,..., a Notary Public, in and for said County, in the State aforesaid, do hereby certify that ....personally known to me to be the same person...... whose name.. subscribed to the foregoing instrument, appeared before me this day in person, and in said County, and acknowledged that ......he...... signed, sealed, and delivered the instrument as..........free and voluntary act, for uses and purposes therein set forth, including the release and waiver of right of homestead, dower and other rights.

Given under my hand this............day of....................191......

....Clerk....................County Court

By ....Deputy Clerk

RECORDATION.

STATE OF KENTUCKY, }
County of.......................................} ss.

I,..., Clerk of the County Court within and for...........................County, Kentucky, certify that the foregoing instrument of writing from.................................... to..was produced to me in my office and State tax paid thereon, the............day of....................1917, whereupon the same with this and the foregoing certificates were duly admitted to record in my office.

Given under my hand this............day of....................191.....

....Clerk....................County Court

By ....Deputy Clerk

ASSIGNMENT.

For Full and Valuable Consideration, the receipt of which is hereby acknowledged,........................does hereby assign and transfer to........................ this grant.

Witness my signature, this..............day of.................. 191.....

....

STATE OF KENTUCKY, }
County of........................ } ss.

Before me the undersigned authority within and for above named County and State, personally appeared ....who acknowledged that he did sign the above assignment and transfer for the uses and purposes therein contained.

IN WITNESS WHEREOF, I have hereunto affixed my signature and official seal, on the date last above written.

PART IV.

AGREEMENT.

THIS AGREEMENT, made and entered into this the ....day of........................191.....by and between .... and .... his wife, who reside on the water of..................in.................. County, State of Kentucky, parties of the first part and hereinafter called the "Grantors," which expression shall include their heirs and assigns, where the context so requires or admits, and........................of.................. County, Kentucky, as party of the second part, and hereinafter called the "Grantee," which expression shall include his heirs, successors, vendees and assigns where the context so requires or admits.

WITNESSETH: That for and in consideration of $.............. ....cash in hand paid, receipt of which is hereby acknowledged, and as first payment upon the sum of $........................per acre, plus other good and valuable consideration, for the property rights and privileges in, of, to, on, under, concerning or appurtenant to the hereinafter described tract of land, balance whereof is to be paid one year from this date and when the amount thereof is ascertained and

conveyed as hereinafter stated, the "Grantor" has sold and hereby agrees to convey to the "Grantee" as hereinafter provided, all the coal, minerals and mineral products, all oils and gases, all fire and potters clay, all iron and iron ore, all stone, and such of the standing timber as may be, or by the "Grantee," be deemed necessary for mining purposes, and including timber necessary for railroads, or branch lines thereof, that may hereafter be constructed upon the said lands, and the exclusive rights-of-way for any and all railroads and ways, and pipe, telegraph and telephone lines that may hereafter be located on said property by the "Grantee," their heirs, successors, vendees or assigns, or by any person or corporation under authority of said "Grantee," or assigns in, of, under, concerning or appurtenant to the hereinafter described tract of land, together with the right to enter upon said lands, use and operate the same and surface thereof and make use of and for this purpose divert water courses thereon, in any and every manner that may be deemed necessary or convenient for mining, and therefrom removing or otherwise utilizing the products of said minerals, and for the transportation therefrom of said articles, and the rights of use of such, as well for the removal of the products taken out of any other land, owned or hereafter acquired by the "Grantee," and the right to erect upon the said land, maintain, use and at pleasure remove therefrom, all such buildings and structures as may be necessary or convenient to the exercise and enjoyment of the rights and privileges herein and in the use of said land and surface thereof by the "Grantee," he, his heirs, successors, vendees or assigns shall be free from and are hereby released from liability or claim of damage to the said "Grantors," personal representative, heirs and assigns. Free access to, upon and over the said land is hereby conferred upon the "Grantee" for the purpose of surveying and prospecting the aforesaid property and interest, but there is reserved in this agreement, and to be reserved also in the deed made pursuant hereto, to the "Grantors" all the timber upon the said land, except that necessary for mining and the purposes hereinbefore mentioned, and the free use of land for agricultural purposes so far as such use is consistent with the rights hereby sold and the right to mine and use coal for his own household and domestic purposes.

Before the "Grantors" can demand as matter of strict right, the payment of said deferred purchase money, the number of acres thereof is to be determined by actual survey, made by, or under the direction of a competent civil engineer, at the expense of the "Grantors," and the "Grantors" shall furnish a complete abstract showing title in them, and thereupon convey or tender to the "Grantee" deed containing covenants of general warranty, and the further covenants that they are seized in fee simple of said land of the rights thereunder, in actual possession thereof, and have good right and full power and authority to convey the same, and that the "Grantee" shall and may have, hold and enjoy the rights granted, free from eviction or disturbance by title paramount to that conveyed by the said deed, and that the land, including the interests hereby sold and thereby conveyed, are free from all liens or encumbrances; concerning which covenants it is hereby expressly declared, that representation as to the same and the aforesaid terms of said warranty to be made, are declared an essential condition and moving consideration for the execution of this agreement.

The following is a description of the lands and property referred to as the subject matter of this piece of writing, situate in..County, State of Kentucky, on the waters of..Bounded as follows:

On the North by the lands of..
On the East by the lands of...
On the South by the lands of..
On the West by the lands of...

and further

IN TESTIMONY WHEREOF the said..............................
and..his wife, have hereunto set their hands and seals, the day and year first above written, and the said "Grantee" has hereunto caused his name to be affixed.

....(Seal)
....(Seal)
....(Seal)
....(Seal)

WITNESS

....

....

ACKNOWLEDGMENT.

STATE OF KENTUCKY,
County of.. } TO-WIT:

I,..a Notary Public in and for the County and State aforeasid, certify that...and..................................his wife, whose names are signed to the writing hereto annexed, bearing date the............... day of......................191........, this day acknowledged the same before me in my County aforesaid. My commission as Notary Public will expire on the........................ day of..191.....

Given under my hand and seal of office this........................ day of...191......

....

Notary Public in and for the County and State aforesaid.

STATE OF KENTUCKY,
County of.. } TO-WIT:

I,..., County Clerk in and for the County and State aforesaid, certify that.................................... and..his wife, whose names are signed to the writing above bearing date the...........day of........................ 191......, this day acknowledged the same before me in my county aforesaid.

Given under my hand this...........day of..........................191......

....

County Clerk in and for the County and State aforesaid.

STATE OF KENTUCKY,
County of.. } TO-WIT:

I, ..., County Clerk in and for the foregoing County and State aforesaid, certify that the foregoing instrument of writing from.. and...his wife, to.. bearing date this.................day of..........................., 191......, was this day produced before me in said County and State and the acknowledgment thereof by the said grantors duly proved as required by law by the oath of..one of the subscribing witnesses thereto, who having first been duly sworn by me testified that said instrument was signed in his presence and in the presence of..............................

the other subscribing witness thereto, by the grantors, and that they as subscribing witnesses signed their names as attesting witnesses thereto at the request of said grantors..................and..................in their presence and in the presence of each other.

Given under my hand this..........day of..................191....

....

County Clerk in and for the County and State aforesaid.

RECORDATION.

STATE OF KENTUCKY, }
County of ....} TO-WIT:

I,.................Clerk of the County Court in and for the County and State aforesaid, do certify that the foregoing instrument of writing from..................
and..................his wife, to..................
bearing date the..........day of..........191......, was this day lodged in my office for record, whereupon the same, together with this and the foregoing certificate, have been duly recorded in my office.

Witness my hand this..........day of..................191....

....Clerk

By..Deputy

(Authors Note—This Agreement form is essentially a Title Bond).

PART V.

ASSIGNMENT OF OIL AND GAS LEASE.

WHEREAS, On the..........day of..................191......, a certain oil and gas mining lease was made and entered into by and between.................................... Lessor...,
.................................Lessee..., covering the following described land in the County of..................and State of..................................to-wit:

Said lease being recorded in the office of the Register of Deeds in and for said County in Book.........., page.........., and

WHEREAS, The said lease and all rights thereunder or incident thereto are now owned by..................................

NOW, THEREFORE, For and in consideration of One Dollar (and other good and valuable considerations), the receipt of which is hereby acknowledged, the under-

signed, the present owner......of the said lease and all rights thereunder or incident thereto, do......hereby bargain, sell, transfer, assign and convey unto.. of.........................right, title and interest of the original lessee and present owner......in and to said lease and rights thereunder insofar as it covers the..together with all personal property used or obtained in connection therewith to..and.........................heirs, successors and assigns.

And for the same consideration, the undersigned for ....and............................heirs, successors and representatives, do......covenant with the said assignee.........................heirs, successors or assigns that..............................the lawful owner...... of the said lease and rights and interests thereunder and of the personal property thereon or used in connection therewith; that the undersigned............good right and authority to sell and convey the same, and that said rights, interest and property are free and clear from all liens and incumbrances, and that all rentals and royalties due and payable thereunder have been duly paid.

IN WITNESS WHEREOF, The undersigned owner...... and assignor...... ha...... signed and sealed this instrument this ....day of..............................191......

....(Seal)
....(Seal)
....(Seal)

OKLAHOMA FORM OF ACKNOWLEDGMENT

STATE OF OKLAHOMA, }
County of..} ss.

On this.................day of..............................., A. D., 191......, before me, the undersigned, Notary Public in and for the County and State aforesaid, personally appeared.. to me known to be the identical person... who executed the within and foregoing instrument and acknowledged to me that ......he...... executed the same as ......h...... free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal of office the day and year last above written.

My commission expires..

....
Notary Public.

Kansas Form of Acknowledgment

STATE OF KANSAS, } ss.
County of.. }

Be it Remembered, That on this..............day of......................., A. D. 191....., before me, a Notary Public in and for said County and State, came.....................................and............................. who...........personally known to me to be the same person...... who executed the within and foregoing instrument of writing and as such person......duly acknowledged the execution of the same.

In Witness Whereof, I have hereunto set my hand and affixed my notarial seal the day and year last above written.

My commission expires..

....
Notary Public.

Acknowledgment for Corporation.

STATE OF.. } ss.
County of.. }

On this................day of.........................., A. D. 191......, before me, the undersigned, a Notary Public in and for the County and State aforesaid, personally appeared.................. and...............................to me known to be the identical person...... who subscribed the name of the maker thereof to the foregoing instrument as its..and acknowledged to me that he executed the same as his free and voluntary act and deed, and as the free and voluntary act and deed of such corporation, for the uses and purposes herein set forth.

Given under my hand and seal of office the day and year last above written.

My commission expires..

....
Notary Public.

GLOSSARY.

TERMS AND METHODS, AS APPLIED IN THE OIL AND GAS INDUSTRY.

Crude Oil.—The raw oil product as it comes from the well.

Fuel Oil.—The residue from the crude oil after the gasoline has been extracted. Used as fuel by railroads, steamships, factories and heating plants.

Oil Sand.—This term refers to the thick layers of porous rock found at various depths below the surface of the earth. This oil sand or porous sandstone is nature's store-house for crude oil. Usually the thicker these layers of sand are the greater the production and the longer the life of the oil well.

Derrick-Standard.—The tall framework which must be constructed before the drilling of a deep well can start. The average height of the standard derrick is seventy-five feet. The great height is necessary on account of the length of the drilling tools which must be lowered into and hoisted out of the wells.

A STANDARD RIG NEAR ESTILL FURNACE.

In the deeper drilling sections of the Estill-Lee-Powell Field drilling rigs of this type secure better results than the portable type. Photo by W. R. Jillson, 1917.

Rig.—The derrick and all that goes with it; the drilling apparatus.

Portable Rig.—Movable drilling machine used for shallow and medium shallow wells of five hundred to fourteen hundred feet.

A PORTABLE DRILLING RIG ON BIG SINKING.

In many parts of this notable Kentucky Oil Field, portable rigs like the one seen above secure quite as good results as the more costly Standard rigs.

Drilling Tools.—The steel bit about six feet long, the steel beam about thirty feet long and the steel jars about six feet long, which are all firmly fastened to the end of the drilling cable. The combined weight of these tools is from four thousand to eight thousand pounds, depending upon the length and diameter of the stem.

Bailer.—This is a steel bucket, usually about thirty feet long and from five to eight inches in diameter. It is used in bailing out water and gravel produced by the drill. The bailer has a false bottom, which is raised when it touches the bottom of the well and allows the bailer to fill up with water, sand and gravel, then immediately closes when the bailer is lifted. This mud, water and sand are emptied into a pond at the side of the rig or derrick. The small particles of sand or gravel which come up in the bailer are carefully examined by the driller, who

should keep an exact record of the formation found at every foot of the well depth.

Casing.—Twenty-foot joints of steel pipe which are used to case out water and prevent caving of the wells in drilling. This casing is used in all sizes from sixteen inch down to four inches in diameter. The twenty-foot joints are fastened together as they are lowered into the well. Casing begins from the top of the ground and each time a string of casing goes into the wells the size of the drill bit must be reduced, to go inside of the casing. Each string of casing must start from the top of the well. From two to a half-dozen or more different sizes of casings are used in each well—one string inside the other. If the well is a producer, the inside string of casing is left in the well and the other casing removed. If the well is a non-producer, all of the casing is lifted out of the well and used again.

Bonus Money.—If a land owner has a piece of land in a location highly approved by geologists or close to producing oil wells, he requires the lessee to pay him, in addition to one-eighth royalty, a bonus of from one dollar to as high as one hundred dollars or more per acre for the privilege of securing the lease. This bonus money gives the lessee one year in which to begin drilling on the land. If the drilling is not started within a specified time, the lease may be cancelled or rentals may be paid at the rate of one dollar or more per acre per annum.

Assignment.—The legal instrument which is issued when the lease owner transfers to an individual or corporation all or part ownership in any lease.

Production.—The term used in designating the crude oil product of oil wells. When producing wells are disposed of, they are usually sold on the basis of the average total daily production of all the wells producing oil on the lease. In referring to a given well or lease as having such and such production reference is made to the daily production.

Settled Production.—The average total daily production from all the wells on any oil lease where the wells have been producing for four months to a year or more. A ten-day gauge for all the wells on the property is usually taken in order to determine the actual average settled production per day so as to arrive at a settlement

PRODUCING WELL AND STORAGE TANK ON THE JACK WELLS LEASE, IRVINE POOL EXTENSION.

Photo by McClure, Lexington.

price. At this time settled production in Kentucky is selling for as much as one thousand to fifteen hundred dollars per barrel.

Flush Production.—Flush production means the early, first production—the maximum production. This usually settles down to about one-tenth in the ordinary well. To illustrate: A well that was "shot" and brought in a five hundred barrel flush production will usually in most cases, settle down in three to thirty days to about fifty barrels per day "settled production."

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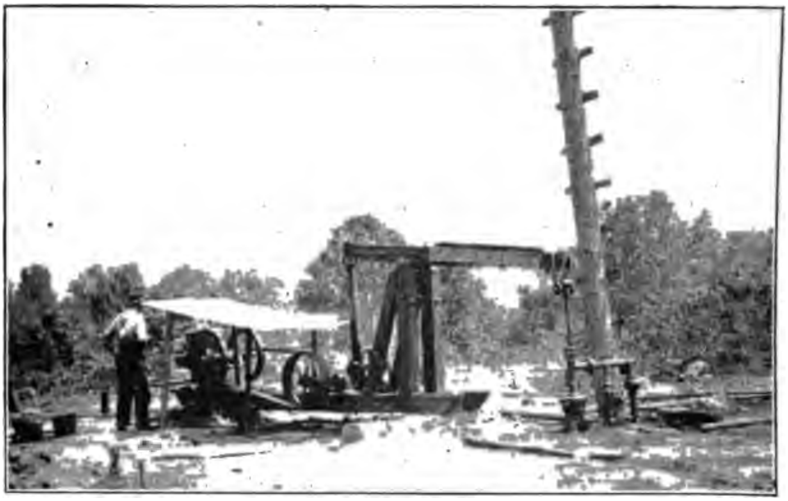
Life of an Oil Well.—No man can tell how long a given well will produce a given production. Old oil men usually say that a fair production will be kept up for ten



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This well at the time it drilled into the pay produced an estimated 1,500 barrels. All of the wells on this lease were shut down to provide immediate storage for it. Photo by W. R. Jillson, July 20, 1919.

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CREST TEMPLE HILL ANTICLINE.

The view is in the big bend of Skaggs Creek on the Smith farm, about ten miles south of Glasgow, Barren County, Ky. This structure was discovered by the author, March 4, 1919. Photo by Chas. Butts, 1919.

FLOWING WELL ON MARTHA REYNOLDS LEASE.

This well came in flowing approximately 1,200 barrels per day. On December 5, 1918, three months later, it was judged at four hundred barrels. It is located in Big Sinking Creek, Lee County, Kentucky. Photo by R. L. McClure, March, 1919.

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